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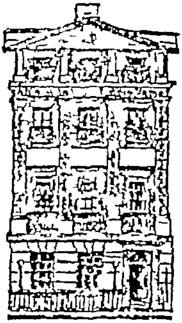

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ADDRESSES AND ORIGINAL ARTICLES

OBSERVATIONS ON THE STRUCTURE OF SUBSTANCES, NATURAL AND SYNTHETIC, AND THEIR REACTIONS ON THE BODY[*]

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THE MIDDLESEX HOSPITAL

It is interesting to read the views of enlightened and distinguished workers of a century ago. If, for example, we study the writings of Dr. William Prout (1831) we can see that despite his brilliant conception of the subject according to the knowledge of his day he had not the faintest suspicion of the control that the organic chemist would obtain over the body. The case of Prout is particularly interesting since it was he who had the prolonged and bitter fight to establish the fact that the acid of the stomach was hydrochloric and not an organic acid such as lactic acid. His beautiful experiments, by which he analysed the gastric juice *for total acid radicals and total basic radicals* proved quite clearly that the greatest part of the *stomach acid must be hydrochloric.* Yet it will be remembered that he had to face the most bitter opposition led by the formidable Claude Bernard. Here was a piece of exact chemical work which removed from the stomach a great part of its mystery, yet Prout in his lectures and writings is everlastingly warning the physician to beware of the chemist. Whilst the chemist may be able to accomplish a few minor observations, he says that Nature will never permit him to control the manufacture of the real body substances.

In defence of the workers of this age, it must be remembered that organic chemistry was literally a new science. The first conclusive experiments upon which organic chemistry was founded were those leading to the now classical synthesis of urea by Wöhler. From that date a series of organic chemists developed the analytical and synthetic side of their subject, and amongst the problems tackled was the constitution of the constituent substances of the body. It would take too long to review the development of this knowledge, but it is safe to say that to-day we possess a detailed knowledge of the structure of the main constituents of the body. Thus, the carbohydrates have been characterised completely from the analytical standpoint, and almost completely from the synthetic angle. The same applies to fats and many of the lipoids. The proteins, however, owing to their extremely complex structure, elude the chemist from the synthetic point of view, and this also applies to the big group of sterols. But as I will show you later, the chemist has learnt so much of the structure and behaviour of the sterols that he can perform the most astonishing feats in converting them from one to another.

The science of pharmacy and pharmacology is of course very much older, and it has always attracted the physician. It is interesting to note that many of the great discoveries in pharmacology were made many hundreds of years ago on purely empirical grounds. For instance, the treatment of malaria by the use of quinine, the use of cod liver oil, and in the eighteenth century Withering's discovery of the action of foxglove on œdema were all based on empirical observations, and the preparation of many of the extracts and decoctions was surrounded with practices little short of witchcraft.

It naturally followed that in the nineteenth century the organic chemist should turn his new technique to the study of the active substances in these plant extracts. Thus began the great attack on the galenical products which has resulted in the substitution of substances of exact chemical constitution for the old preparations. By the end of the last century a very great amount of knowledge had been collected on the chemical constitution of the active constituents of plants, and already a number of laws had been formulated as to the relationship between chemical structure and pharmacological action. Many of the naturally occurring substances, such as the salicylates, were prepared synthetically, and it was shown that the action of these products of the laboratory was precisely the same as that of those prepared from natural sources. In some instances—for example, the alkaloids of opium—it was possible to have a number of substances of differing chemical constitution with roughly the same action, and this led the organic chemist to try to make artificial substances capable of therapeutic action.

Chemotherapy

Some of the earliest experiments on these lines were conducted in the search for antiseptics, and large numbers of phenols, cresols, &c. were prepared and tested. It became obvious that by modifying the molecule in an orderly manner it was possible either to enhance or diminish certain pharmacological properties, and on the basis of these experiments the science of chemotherapeutics was developed. The first important triumph in this field was undoubtedly the discovery of salvarsan by Ehrlich (1909). Working on a definite assumption that a curative agent against a spirochæte would not be effective unless it was absorbed into the body of the parasite, he passed to the experimental study of a very large series of organic compounds of arsenic. The examination and preparation of 605 compounds, with the final selection of the 606th as the active substance, is so well known and has been reviewed so often that we need not consider it further. I might, however, point out that there is a very common misunderstanding of this work. Many people who are not familiar with the original literature are under the impression that the first 605 compounds were completely inactive, whereas the 606th proved to be the long sought "silver bullet." This of course is not so. There was activity in a great many of the compounds, but they also possessed certain disadvantages with regard to toxicity in relation to curative effect, or defects of solubility, stability, and so on.

Here we have one of the first lessons of chemotherapy—namely, that the particular activity sought for is shared by a great many substances, and that it is quite possible to have organic compounds with a differing constitution all with the same therapeutic effect. An excellent example of this phenomenon is given by the recent work on the new antistreptococcal drugs.

It will be remembered that through the work of Domagk (1935) it was shown that certain complex azo dyestuffs are capable of conferring a high degree f protection upon mice injected with a virulent rain of streptococci. The most potent of the series as known as Prontosil This substance is inactive vitro, but highly active when injected or adminis ered by mouth It has been used extensively in the reatment of streptococcal infections, and according o the published accounts this would appear to form ne of the greatest advances in the treatment of hese conditions It was shown later by a group of rench workers (Tréfouël, Nitti, and Bovet 1935) hat the prontosil molecule is excreted in the urine part at least in a disintegrated form, and that it possible to recover from the urine the relatively imple substance p aminobenzenesulphonamide (see ig A) This was administered to mice under the ame conditions as prontosil and was found to be qually efficacious The substance has now been sed extensively in clinical work and appears to have ll the advantages of the original prontosil.

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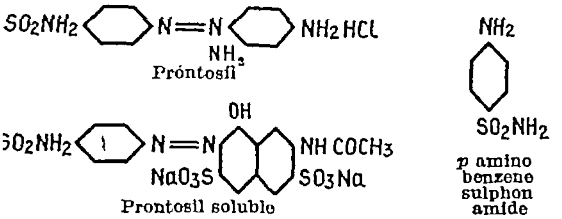
[*] A lecture given at the Institute of Pathology, St. Mary's Hospital, London, on May 25th.

FIG A



Prontosil

Prontosil soluble

p amino benzene sulphon amide

It would be possible to quote many similar examples here the difference in molecular structure is even reater than that between prontosil and sulphonamide

Female Sex Hormones

It is perhaps in connexion with the development f the sex hormones that the most striking and interest ng lessons can be drawn from the relationship between nolecular structure and function The work on he female sex hormone has been well summarised y a number of writers, and it will only be necessary o give the very briefest outline of the earlier work n order to lead up to a study of the exact informa ion that we have to day

The first major advance was made by Allen and Doisy (1923) when they showed that an alcoholic extract of the ovary or follicular fluid was capable of producing œstrus in the ovariectomised rat or mouse This observation made it clear that a stable and active preparation could be obtained, and that its activity could be assessed with a fairly high degree of reproducibility on a test animal. Without these two factors progress would have been impossible

Biochemists and organic chemists at once began an intensive investigation into the chemical nature of the substances present in the alcoholic extract of the ovary with the object of characterising them from the chemical point of view When I had the distinction of lecturing in this institute some ten years ago, I described the work that had led up to the preparation of this active extract, but at that time we had no idea of the constitution of the substance or substances responsible for the activity During the ten years that have elapsed since then the progress has been perhaps greater than in any other subject, and it is mainly with this aspect of the problem that I have to concern myself to day As already pointed out, ten years ago the chemist and biochemist had no conception whatsoever of the nature of the active principle present in what might be termed the "ovarian extract" The name of œstrin was suggested merely to indicate a substance extracted from the body capable of producing œstrus in animals All that was known at this time was that it could be obtained in a form in which only carbon, hydrogen, and oxygen were present, it had been purified to a considerable extent, and the rat unit had been reduced to about one tenth of a milligramme But beyond this it seemed almost impossible to go, and investigators were left with an obviously impure oil.

One of the worst difficulties lay in the scarcity of material. To obtain relatively pure samples it was necessary to employ as starting material follicular fluid, and it can well be imagined that the collection of sufficient quantities of this was by no means easy It was not until Zondek and Aschheim (1927) proved that the active principle was excreted in very large quantities in the urine of pregnancy that an adequate supply was available for the chemist Moreover, it was apparent that the substance excreted in the urine of pregnancy was in a much purer state than the material obtainable from follicular fluid A wholesale collection of the urine of pregnancy from both human and animal sources was arranged, and the active substance was extracted by means of a volatile solvent In this way large quantities of relatively pure material became available, and the next step in the development of an exact knowledge of the chemical constitution of the substance occurred when it was crystallised simultaneously by Doisy (1929) in America, and by Butenandt (1929) in Germany Marrian (1930) in England succeeded in obtaining crystals of an active substance which differed in composition from that of Doisy and of Butenandt A great deal of further careful work showed that there were at least two substances present in the urine of pregnancy

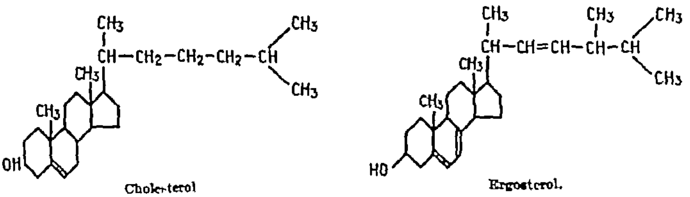
Now that the chemist was supplied with a crystalline substance, he was able to determine its constitution The work of a very large group of investigators was successful in showing that the œstrogenic substances were related to the sterols At this point it may perhaps be as well to digress for a moment on the subject of sterol chemistry

THE STEROLS

For many years the constitution of the sterols—that is substances like cholesterol, ergosterol, and the phytosterols—has been a puzzle to organic chemists Mainly through the work of the German investigators, Windaus and Wieland, it was shown that one of the essential parts of the sterol molecule was composed of a series of six membered carbon rings fused together with, at one point, a long side-chain attached to the condensed carbon ring system The actual grouping of these rings was the subject of much discussion and controversy, and no clear view of the structure of the sterols was obtained until Rosenheim and King suggested that the rings were arranged in the form of cyclo penteno phenanthrene Experimental proof of this arrangement was rapidly forthcoming, and to day the constitution of most of the sterols is known (Lettré and Inhoffen 1936) They all consist of the cyclo penteno phenanthrene nucleus with a side chain attached to the 17 carbon atom, and there are various polar groups and double bonds in the nucleus (see Fig B) It is no exaggeration to say that but for this pioneer work on the structure of the sterols, all knowledge of the sex hormones to day would be relatively insignificant, and it is also safe to say that many of the hormones to which we shall refer later would not be available for clinical purposes

As already pointed out, the sex hormones were shown to be related to the sterols and, in fact, consist of the sterol nucleus without its side chain By procedures known to the organic chemist which we need not discuss here, the structure of the three principal œstrogenic compounds are as shown in Fig C

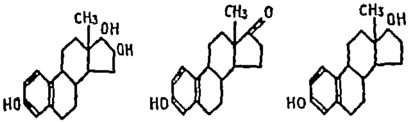
FIG B


Cholesterol Ergosterol.

Œstriol is not so potent as œstrone and for a considerable period œstrone was regarded as the true hormone of the ovary It was then shown however that if œstrone be hydrogenated it is converted into œstradiol with the formula shown above, and this substance has a potency of about five times that of œstrone. By this means the organic chemist was apparently able to improve on the products of nature but it is interesting to note that quite recently Doisy and his collaborators (MacCorquodale et al. 1935) have isolated œstradiol itself from the follicular fluid and there appears to be little doubt that it is secreted by the body and is the most important of the naturally occurring œstrogenic substances.

The methods of manufacture have been greatly improved. From the urine of pregnancy large quantities of œstrone are extracted and this is converted to œstradiol in the laboratory the œstradiol is then converted to an ester usually the benzoate, and it is in this form that the substance is available for clinical trial. Whilst œstradiol will reproduce the œstrus cycle of the castrated rodent, experiments on the higher animals show that it will not reproduce a complete cycle such as for instance the menstrual cycle of the primate It is possible to produce uterine changes but it is not possible to produce the premenstrual thickening of the mucosa which is necessary in the menstrual cycle. This requires the presence of the hormone from the corpus luteum

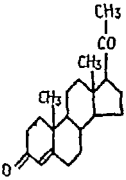
FIG C


Œstriol. Œstrone Œstradiol

PROGESTERONE

The corpus luteum hormone was isolated by Corner and his associates by experiments on the pseudopregnant rabbit (Allen and Corner 1929) It will be remembered that ovulation—that is rupture of the follicle—only occurs in the rabbit after copulation If the male is vasectomised and therefore sterile, ovulation will occur but pregnancy will not of course supervene The animal then passes into what is known as a state of pseudopregnancy in which the uterus enlarges, and the mucosa undergoes all the progestational changes associated with pregnancy This lasts as long as the corpus luteum persists but when this atrophies the state of pseudopregnancy ceases and the animal returns to the state of di œstrus Now if an ovariectomised rabbit be taken and be injected with œstrone the uterus does not assume the same character as in the pseudopregnant animal. It enlarges, but the thickening of the mucosa and the increase in the uterine glands does not follow as in pseudopregnancy Corner was able to show however that if in addition to œstrone an alcoholic extract of the corpus luteum was administered then pseudopregnancy would result By this means the corpus luteum hormone was isolated. Attempts to determine the constitution of this hormone went through stages resembling those of the attack on the constitution of œstrone Unfortunately the only source of the material was found to be corpora lutea. The substance was crystallised by Butenandt (1934) and its constitution was finally worked out It has been called progesterone and has the formula shown in Fig. D

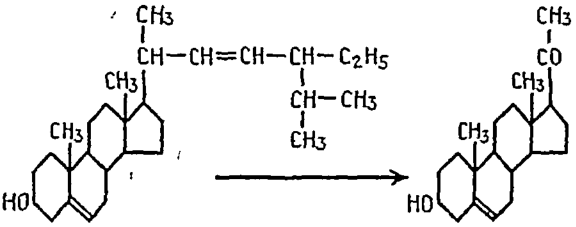
FIG D


Progesterone.

If both œstradiol and progesterone are given to the castrated primate, or even to the castrated woman as shown by Kaufmann (1935) the menstrual cycle can be reproduced at will. But there is no convenient source for the corpus luteum hormone, as there is for œstradiol, and it appeared that this material would always be scarce from a clinical standpoint. Here again however a very remarkable development in organic chemistry resulted in a solution to this economic problem

From what I have already said about the constitution of the sterols it will be remembered that by suitable organic chemical manipulation it is possible to remove the side-chain from the 17 carbon atom thus leaving the sterol nucleus with its associated polar groups double bonds &c. Now if a sterol be selected in which the polar groups and double bonds are in the same position as those of the sex hormone it might be possible to prepare the hormone from the sterol by removing its side-chain For instance the sterol obtainable from soya bean—namely stigmasterol—happens to have the same structure in the nucleus as progesterone and by removing its side-chain it is possible to prepare the active hormone from the inert sterol. This has made a very great difference to the availability of the corpus luteum hormone. Its preparation is represented in the diagram (Fig E). It is interesting to note in passing that but for the years of elaborate academic work on the constitution of the sterols—work which to many clinicians appears to have no practical value—the preparation of the active therapeutic agent would never have been possible. There is no doubt that the employment of œstradiol and progesterone which are now available in stable standardised forms has revolutionised the treatment of many gynæcological disturbances. Thus the treatment of menopausal symptoms by œstradiol, and the treatment of amenorrhœa by combined therapy, form two of the greatest advances that have ever been made in therapeutics.

FIG E

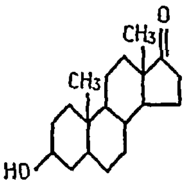


Stigmasterol to Progesterone

Male Sex Hormones

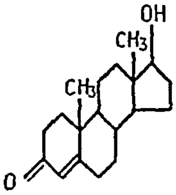
By the application of the methods of organic chemistry to biological observations, the problem of the male sex hormone has also been very largely solved. According to classical literature the first observation as to the potency of extracts of the testis was made by Brown Séquard (1889) in his well known experiments upon himself. In the light of modern knowledge, however, it appears almost certain that the beneficial effects described by him from extracts of testis must have been due to suggestion, since we know that if he had extracted the whole of the hormone from the quantities used it would have had no effect upon him. The first workers to prepare a uniformly stable extract of the testis were the Chicago group under Koch. They showed that an alcoholic extract of bull's testis was able to restore the comb growth of the capon (McGee 1927). Using this method for standardisation, preparations of the product were refined, and its presence was later shown in the urine of adult males. From the urinary material Butenandt (1931) succeeded in obtaining the crystalline substance which he termed androsterone. A careful study of its properties showed that its constitution is as shown in Fig F.

FIG F



Androsterone

FIG G



Testosterone

This material, however, is active only in very large doses, and later another substance called testosterone was extracted from the testis by Laqueur (David et al 1935). Its constitution is shown in Fig G, and it is interesting to note that it can be prepared by the degradation of cholesterol in the same manner that progesterone can be prepared from stigmasterol. To day large quantities of testosterone are available, and they are prepared almost entirely from cholesterol by the method described.

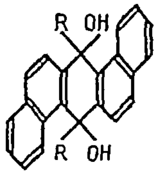
The clinical use of testosterone has not yet been fully explored, but it appears to be capable of replacing the normal testicular function in the castrate. It is also interesting to note that its ester, testosterone propionate, is much more potent than the free hormone, and the possible explanation of this probably lies along the lines of altered absorption.

A New Group of Œstrogenic Substances

We are now in a position to review the lessons which can be learnt from all this chemical work as to the relationship between chemical structure and physiological action. We have described at least three substances capable of producing œstrus, and we know that there are a number of others present in the urine of pregnancy, we have also described two substances capable of producing male sex activity, and again it is known that there are a number of others. What is still more confusing is the observation that certain male sex hormone substances appear to be capable of inducing œstrus. This observation renders the interpretation of hormone analysis in the different sexes extremely difficult.

The synthesis of the sex hormones has not yet been possible owing to the extraordinary complexity of the molecules. Since, however, at least five substances appear to be produced by the body, all of which are œstrogenic, the question of the specificity of the œstrus reaction is at once raised. An attempt was made (*Cook, Dodds, Hewett, and Lawson 1934*) to see whether certain synthetic compounds were capable of producing œstrus. In all the naturally occurring œstrogenic compounds the phenanthrene nucleus is present, a number of derivatives of phenanthrene were therefore investigated, and it was found that the compound 1 keto 1 2 3 4-tetrahydrophenanthrene was capable of producing œstrus, and in fact possessed all the properties of the naturally occurring hormone. But the activity of this compound was extremely small from a quantitative point of view when compared with that of œstrone. It is very significant that the complex changes of the œstrus cycle can be induced by so simple a molecule.

FIG H



Certain dibenzanthracene diols

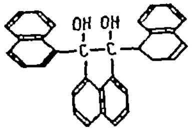
A very large number of compounds were investigated, and one of the most interesting series was the alkyl diols of 1 2 5 6 dibenzanthracene with the general formula given in Fig H. Where the alkyl substituent is methyl the compound is inactive, the corresponding di ethyl compound, however, is active, whilst the di *n*-propyl diol is as active as a naturally occurring œstrogenic substance, œstriol. The di *n*-butyl is not so active, whilst the di amyl and di hexyl are inactive. Here is an orderly series of compounds possessing a fairly high degree of activity, yet the molecular structure differs very markedly from that of the naturally occurring substances.

An intensive investigation was then undertaken to determine whether the phenanthrene nucleus was necessary, and it was demonstrated (Dodds and Lawson 1936) that many compounds could be obtained which showed a high degree of activity without the phenanthrene nucleus. The Table shows the activity of some of these compounds, and some of the formulæ are also reproduced (see Fig I).

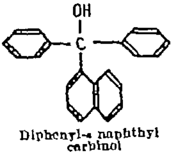
From this it can be seen that the phenanthrene nucleus is not necessary for activity since a molecule so simple as 4 4 dihydroxy diphenyl shows all the activity of a naturally occurring substance.

Still more recently (*Dodds and Lawson 1937a*) these investigations were extended, and it was shown that 4 4′ dihydroxy stilbene and 4 4 dihydroxy tolane possessed a high degree of activity. Thus *p* hydroxyphenyl ethyl alcohol possesses œstrus activity of a definite character although the potency of this compound is low. The observation, however, is of considerable importance that this complicated cycle of changes could be produced by so simple a substance A very interesting phenomenon was encountered with another simple œstrogenic agent—

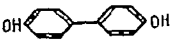
FIG 1



1 2-dihydroxy 1 -di α naphthyl acenaphthene



Diphenyl-α naphthyl carbinol



4 : 4 -dihydroxy diphenyl

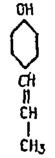
namely p hydroxypropenyl benzene which has the formula given in Fig J

Certain batches of this substance were found to be active in doses of 1 γ which indicates roughly the same activity as that of œstrone A reinvestigation of this problem however (Dodds and Lawson 1937b) showed that the high activity was due to an impurity produced during the method of manufacture. It thus appears that there is an entirely new group of œstrogenic substances of simple constitution and this field is at present under intensive investigation We cannot at the present time indicate the molecular structure necessary for œstrogenic activity but it has become very probable that we shall be able to produce in the laboratory a synthetic simple substance that is capable of performing all the actions of œstrone with a very high activity

Substance	Dose in mg	Per cent positive
1 2-dihydroxy 1 : 2-di-α naphthyl acenaphthene	100	100
	10	100
1 : 1-di-α naphthyl-acenaphthene	100	100
α naphthyl benzoin	100	40
Diphenyl-α naphthyl glycol	100	60
Diphenyl-α naphthyl carbinol	100	100
4 : 4-dihydroxy diphenyl methane	100	100
Di-(p-hydroxyphenyl) dimethyl methane	100	100
Di-(p-hydroxyphenyl) methyl ethyl methane	100	100
Di-(p-hydroxyphenyl) methyl propyl methane	100	100
Di-(4 hydroxy 3-methyl phenyl) dimethyl methane	100	100
Di (4 hydroxy 3 methyl phenyl)-1 1 cyclo hexane	100	100
4 4-dihydroxy triphenyl methane carboxylic acid lactone	100	100
4 4 dihydroxy benzophenone	100	80
4 4 -dihydroxy diphenyl	100	100

Rats remained in œstrus 40 days.

FIG J



p hydroxy propenyl benzene

The purpose of this lecture has been to indicate very briefly the truly amazing growth of organic chemistry as applied to medicine and therapeutics I have endeavoured to indicate to you the achievements of this relatively new application of chemistry and to give you an idea of its potentialities

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(Continued at foot of next column)

A STUDY OF CRETINISM IN LONDON

WITH ESPECIAL REFERENCE TO MENTAL DEVELOPMENT AND PROBLEMS OF GROWTH

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LATE RESEARCH PSYCHIATRIC SOCIAL WORKER AT THE HOSPITAL

(*Concluded from p 1509*)

BEFORE attempting to make in cretins a similar comparison to that just quoted for healthy children—viz between a mental measure of development such as the intelligence quotient and a physical one such as height—it is advisable to consider the differential nature of growth in the body and the distinction between growth and development Growth cannot be regarded as a unitary process in the organism. It varies in different parts and the rate of growth of various parts is dependent on that of others. Growth is an aspect of development the coarse structural expression of it Growth does not occur in a steady progression the rate of growth of various organs and groups of organs is not only different but varies for the same organ during different periods of life. Four types of development have been described neural (brain cord eye) lymphoid (intestinal lymph masses thymus) genital (testes ovaries, prostate uterine tubes seminal vesicles) general (body as a whole respiratory and digestive organs kidneys aorta and pulmonary trunks blood volume spleen musculature and skeleton) There are other heterogonic types among which are the curves of development of the suprarenal glands the hypophysis and the thyroid. The hypophysis and the thyroid both show a fairly constant increment from birth to maturity "with little indication of more rapid growth in infancy nor surprisingly a parapuberal acceleration (Scammon) The relative increment of the hypophysis is less in post-natal life than that of the thyroid but the form of the curve is the same. Although there are the figures of Rössle Wehefritz Arndt, and more recently Freeman to show the weight of the adult thyroid gland no data are available for patients with juvenile myxœdema

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Different organs are developing at different rates, scarcely any do so with a constant increment for age This is, however, the case with the thyroid and the hypophysis they show a steady increment from birth to maturity These glands each exert an influence on the development of other organs One might suppose that they themselves developed at an intrinsically determined rate, independently of other organs However this may be, the extent to which these steadily growing glands influence the development of other parts can be determined by studying the effects of ablation Since in man precise studies of differential growth of organs after thyroidectomy are impossible, the evidence in animals must be considered Besides the many reports on amphibia, there is the work of Hammett upon groups of albino rats in whom the thyroid was removed at 23, 30, 50, 65, 75, and 100 days respectively and the organ sizes and weights determined and compared with those of unoperated controls It was found that the relative retardation of growth which ensued increased with the age of the animal, this did not mean that the actual level of development attained was necessarily lower in the animals operated on later than in the earlier ones Moreover, it was found that the central nervous system and the eyeballs were resistant to the retarding effect of the thyroid loss, their growth was less retarded than that of the body weight but approximately the same as that of the body length The reverse was the case with the lungs, heart, liver, kidneys, spleen, adrenals, and pancreas, in some of these there was not merely greater retardation than that of the body as a whole, but even retrogression The hypophysis showed accelerated growth It is doubtful whether these observations on the rat can be applied in detail to the phenomena of thyroid insufficiency in man They indicate, however, that the influence of the thyroid on the growth of other organs is to produce a distortion of differential development, they suggest also that the degree of sensitivity to thyroidectomy in a group of organs is related to their normal growth coefficient Hammett denies this, but on unconvincing grounds, as Huxley points out

In these studies it is the *increase in size of organs* that has been used as the criterion of rate of development Functional development has not been measured. A parallelism between development of function and size of organs is not easy to establish In the case of mental functions it is especially difficult to correlate their development with that of the organic substrate

A structural change in an organ (usually enlargement) during development will be an expression of alteration in the size of its cells, their number, and the proportion of different kinds—i e, it expresses enlargement, multiplication, and differentiation Together with this there will be a manifestation of entirely new functions or an alteration of previously manifest function, which may be qualitative or quantitative In the case of the thyroid gland, for example, only a quantitative development of function need be considered (i e, more thyroxine is secreted) in the case of the central nervous system, on the other hand, all the possibilities of functional development are realised In considering the differential growth of organs, it is necessary to take into account their dependence on other organs, and relationship with them, and the fact that integration is itself a feature of development This is still more necessary if functional development be considered, not only organ systems must be regarded, but the whole organism in relation to its tasks, mental development can only be assessed by considering what the environment requires of the organism, and this is true also, to a great extent, of respiratory, cardiac, alimentary, and other part-functions

It is therefore irrational to attempt a correlation between level of mental development, which is a measure of function, and level of physical development—e g, stature—which is a measure of structure, unless one assumes that structure is itself a measure of function, or that some other constant and measurable relationship obtains between all structure and function in the organism This assumption is impossible at present, as the central nervous system clearly illustrates, even if the most refined methods of histological and chemical investigation be employed, we are still unable to show a constant measurable relationship between the functional capacity and the structure of normal tissue In the case of abnormal tissues, such a correlation can in some instances be established. It may therefore be permitted, on empirical grounds, to attempt to relate the disordered function of people with thyroid deficiency to their disordered structure

There is, however, still another difficulty here The thyroid is not the only influence upon development There is the pituitary, there are other endocrine glands, there are exogenous factors such as food and vitamins (cf also Wendt), there are complicated mixtures of endogenous and exogenous factors, as in renal dwarfism, a physically or mentally defective creature may be unable, because of his defect, to get adequate nutrition, and so he becomes stunted These possible influences are disregarded or taken as constant when one compares subthyroid patients with each other or with normal people, some of the influences, if operative, will have a differential effect on various structures and functions, so that they would complicate the relationship between particular features of cretinism The growth of the pituitary in thyroidectomised animals (Zeckwer, Davison, Keller, and Livingood) and in subthyroid human beings lends support to the view that the symptoms of myxœdema in childhood are not due solely to the thyroid loss, excluding other endocrine changes, it is not known whether the hypophyseal growth after thyroidectomy mediates or mitigates the effect of the operation Moreover, the thyroid itself is only a mediator, setting the tempo, rather than supplying the main stimulus The body tends to develop along certain lines, hereditarily determined, modifiable by the environment, and worked out through variables which may be disturbed artificially (e g, amputation of an organ or interference with its function causes other organs to develop differently), removal of, say, thyroid secretion causes the whole organism to develop differently, but still not without regard to its genotype, its inherent line of development Thus it is to be expected that the loss of the same amount of thyroid secretion at the same stage of development would have very different results on the intellectual level of two boys, one of whom had hitherto been an imbecile and the other gifted One cannot ignore individual differences which are irrespective of thyroid deficiency when assessing the effects of such deficiency

It is, moreover, false to assume that all the phenomena of subthyroidism or athyroidism are in the nature more or less of complete arrest of development This is not uncommonly taken for granted in regard to the intellectual disturbance The phenomena are indicative in part of a perversion of function or degeneration this is strikingly seen in the myxomatous changes from which the condition derives its name The changes in the ossification of the bones are another illustration, it is not as if they remained those of a child The signs of myxœdema, as it occurs in adult life are by no means entirely the same as those of the condition occurring during the phase of rapid development they are metabolic and trophic rather than developmental. It is true that development is a process which does not cease after adolescence and that decay itself is part of it but the relative stability of structure and function during adult life and the relatively very slow tempo of change then justify the above distinction The phenomena of adult myxœdema are in part those of juvenile myxœdema or cretinism and it might be supposed that the differences between them obtained by subtracting the former from the latter represented the effects of thyroid deficiency upon development They may be due to arrest of development or to a perversion of functions that would not be possible if development had slowed down and stability been reached *The latter changes, there is ground* for supposing, are less reversible than the trophic and metabolic changes found also in adult myxœdema the myxomatous condition of the skin for example responds far more to substitution therapy than the skeletal changes The length of time that there has been thyroid deficiency during childhood is of far more importance as regards response to treatment than in the adult form of the illness When assessing in this investigation the parallelism between different functional or structural effects of the deficiency it has been impossible to ignore the factor introduced by delay in commencing treatment as well as by long interruptions in treatment (cf Canelo and Lisser)

Finally before attempting to compare mental measurements with stature it is necessary to consider that the chief material substrate of mental function the central nervous system is of rapid growth in size especially during the first few years and that in this respect it is resistant to interference—e g by ablation of the thyroid in animals. Todd pointing out that the brain reaches approximately full dimensional growth in six years or less and that mental growth thereafter cannot parallel physical progress, concludes that up to the present no statistical correlation is practicable between physical growth and mental development but that the course of each can be studied and collateral progress noted It is moreover possible for development in weight to go on without concomitant development in higher functions the brains of adult imbeciles cannot be differentiated by their weight from those of normal persons The researches of Scholz and Zingerle and of Wegelin do not disclose any difference in weight between the brains of cretins and those of the rest of the population. Microscopic changes have been described but are by no means specific (Lotmar Kena-Apajalahti) There is consequently a wide gap between the level of mental development measured by the customary tests and the level of neural development measured by weight, size, or architectonics This is what might be expected; it indicates how difficult it is to compare "mental levels with others as Gesell has emphasised. The general question of our methods of measuring function especially mental function is not suitable for examination here. Accepting these methods the curve of mental development has been found by Richardson and Stokes to correspond to the Gompertz equation $y=Ca^{bx}$ where y is the growth at time x; C is the amount of growth at maturity and b and a are constants but that the growth curves of the abilities tested by different test items are distinct from one another though clustering fairly closely about the mean curve Since however different tests are employed at different ages and their standardisation is attained by working out a mean a growth curve here is a dubious affair The same difficulties are met with if mental development in other than intellectual respects be considered Psychosexual development for example cannot be measured though a rough parallelism between it and the development of the gonads can be recognised

Any correlation made between the level of mental development as measured by the Binet Simon scale and the standing height of the patients is therefore a statistic that is partly invalidated by the uncertainty and unsuitability of the data from which it is derived

INFLUENCE OF TREATMENT

Much of what has been said above has a bearing upon the evaluation of treatment Clinically however it is important to know whether patients who are treated promptly adequately and continuously do well or if not what other factors must be considered as having influenced the outcome

In some of the cases in this series an exact record of their treatment was available as well as a definite history as to the time when symptoms of the condition had first been noticed. In others the position was less clear Many of them had been treated in the out patient departments of hospitals which discard their out patient records after ten or fifteen years, so that no medical data about the patient had survived; others had taken their tablets off and on, some with intervals of many years between medication others with a capricious indifference that defied any precise statement as to quantity or duration of treatment. It was often impossible to discover whether the doses were of whole or desiccated gland substance

With the data available treatment was rated on a five-point scale —

A representing prompt continuous treatment

B: treatment promptly undertaken and continued with only brief interruptions until adult life;

C: treatment begun a year or more after the first appearance of symptoms, but carried on pretty continuously thereafter or treatment promptly undertaken but carried on only at long intervals until adult life;

D: treatment begun a year or more after onset and carried on only at long intervals, until adult life;

E no treatment at all during the first twenty years of life

The accompanying Table shows the subjects arranged in order of intelligence quotient and classified according to adequacy of treatment age, height degree of physical signs and age of recognition of symptoms (in first year second year or later)

It is evident that a majority of those with an intelligence quotient of above 70 had had fairly adequate treatment but that it was by no means impossible for those who were treated promptly and continuously to remain grossly defective In short adequacy of treatment is an important but not always a decisive factor in determining the mental level attained.

There were five patients who remained grossly defective in spite of prompt and continuous treatment One of these could not be assessed on any intelligence tests. (The statements about treatment in this case may have been incorrect as *the mother* had left the home. Little or no history could be obtained about the mother or her collaterals The birth was instrumental.) In three of the remaining four cases a difficult birth was recorded; in addition one had a spinal deformity another had been a

TABLE SHOWING PATIENTS ARRANGED IN ORDER OF INTELLIGENCE QUOTIENTS, WITH COLUMNS AFTER THEM, SHOWING HEIGHT, DEGREE OF PHYSICAL SIGNS, ADEQUACY OF TREATMENT, AND AGE OF RECOGNITION OF SYMPTOMS (IN 1ST YEAR, 2ND YEAR, OR LATER)

Patients initials	Age	I Q	Height	Physical signs	Adequacy of treatment	Symptoms first noted
G J	9	116		1	A	L
M A	27	103	5 ft 4	1	A	L
H P	38	102	4 ft 10½	3	E	L
C L	16	101	3 ft 10½	2	E	L
B A	13	94	4 ft 3½	2	E	L
K E	26	93	5 ft 2½	1	A	2 yr
F H	50	93	4 ft 0½	3	E	L
L I	17	92	4 ft 11½	1	A	L
F T	22	89	4 ft 11½	3	C	L
G M	17	88	4 ft 11½	1	B	2 yr
G T	11	87	—	2	C	L
R J	16	86	4 ft 4	2	C	L
W E	23	86	5 ft	2	B	L
A S	38	83	5 ft 3½	1	C	L
B G	12	83	—	1	A	2 yr
W P	23	80	5 ft	1	A	L
L S	43	77	4 ft 6½	3	C	? 2 yr
H E	12	72	—	1	C	L
J M	7	70	—	1	A	L
S E	18	70	4 ft. 10½	1	D	1 yr
C W	12	70	—	1	C	1 yr
Go A	11	69	—	3	D	2 yr
N C	26	69	4 ft 10½	2	B	L
V E	32	69	4 ft 9½	1	D	L
L H	53	67	4 ft 4	3	E	L
R E	22	64	4 ft 4½	2	C	2 yr
H F	40	63	4 ft 1	3	C	1 yr
B M	30	62	4 ft 0	3	D	L
D F	40	62	5 ft 1½	2	C	L
G G	42	62	4 ft 5½	3	C	2 yr
A H	47	62	3 ft 11	3	E	L
M E	24	61	4 ft 5½	2	E	?
C M	27	61	4 ft 6½	3	E	1 yr
R F	31	60	4 ft 5	1	E	L
F C	17	59	4 ft. 6	1	C	2 yr
T E	42	59	5 ft 0	1	C	L
E E	32	58	4 ft 1	3	B	1 yr
W G	34	57	4 ft 9	1	E	L
R C	27	54	5 ft 3	3	C	1 yr
C F	41	52	4 ft 5	2	E	L
N B	31	51	4 ft 8½	1	D	1 yr
D J	21	50	4 ft 6	3	E	L
M B	6	49	—	2	B	1 yr
R J	41	49	4 ft 10½	2	E	L
B V	32	48	4 ft 10	2	C	L
K A	40	46	4 ft 4	3	E	L
L H	28	46	4 ft 11½	2	E	1 yr
G M	20	45	—	3	C	L
S J	42	45	3 ft 10½	3	E	L
H A	19	44	4 ft 6	3	E	1 yr
M G	24	44	4 ft 3	3	D	? 2 yr
B P	21	42	4 ft 7	2	E	L
S L	32	41	4 ft 5	2	E	1 yr
E M	43	40	4 ft 0	3	D	2 yr
J A	30	39	3 ft 10½	3	E	? 1 yr
K D	20	39	4 ft 5	2	E	1 yr
S M	20	39	—	1	D	L
B E	24	38	4 ft 10½	1	—	L
T A	36	38	4 ft 1	2	E	L
O L	19	34	4 ft 0	1	B	1 yr
C N	3	33	—	1	B	?
G L	34	32	4 ft 1	3	E	1 yr
T J	21	32	4 ft 2	1	A	1 yr
W H	16	32	3 ft 0	3	C	L
M J	11	29	3 ft 5	1	E	1 yr
R. M	58	29	3 ft 8	3	C	L
T B	14	29	3 ft 7½	2	C	2 yr
B F	33	27	4 ft 0	3	E	? 1 yr
S R.	14	27	4 ft 4½	3	C	L
C G	49	24	4 ft 3½	3	E	2 yr
K M	17	22	4 ft 5	3	C	1 yr
S A	24	21	4 ft 6	1	C	L
K M	31	21	4 ft 7	2	E	? 1 yr
S R	16	21	3 ft 11½	3	D	1 yr
M F	40	20	4 ft 5½	1	E	?
R A	27	20	3 ft 9½	1	E	1 yr
C S	6	16	—	3	D	2 yr
B G	26	13	4 ft 3	1	E	L
D E	16	—	3 ft 8	3	A	1 yr

N B —Adequacy of treatment is reckoned on a five point scale of descending efficiency A–E (see page 7) —Physical signs of cretinism are reckoned as (1) slight or indefinite (2) moderate and definite (3) marked L =later i e after second year

difficult feeding problem in infancy, but in all three the possibility of some brain injury at birth must be considered In the remaining case there was nothing in the family or the clinical history to account for the mental backwardness

The five patients whose intelligence quotients were good in spite of little or no treatment showed, with one exception, well marked physical signs of cretinism One case (H P, aged 34), who had had no treatment, had an intelligence quotient of 102 He had been diagnosed as juvenile myxœdema at 12 years, but, judging from the history had shown physical signs of cretinism as an infant and at the time of this study showed well marked signs No family history was available in this case Another case (C L aged 16) with an intelligence quotient of 101 had also shown physical signs from infancy but had only had one year's treatment from 11–12 years the birth was reported to have been difficult there was nothing of note in the family history Another patient with an intelligence quotient of 94 had had no treatment until 13 years and very little for some years since his mother had cretinoid features Familial cretinism and cretinoid features in the mother were present in the fourth case (F H) described elsewhere Her intelligence quotient was 93 she had well marked signs of cretinism but had had no treatment The fifth case showed only slight signs of cretinism and had had treatment from 3–11 years continuously; her intelligence quotient was 70

In the foregoing the possibility of information about treatment being erroneous has to be borne in mind Moreover treatment may have been prompt and continuous yet the doses given inadequate Nobel lays stress on this point And finally there were doubtless differences in the degree of the hypothyroidism—in some total athyroidism in others mild deficiency—and differences in age of onset which were important but which could not be evaluated in this study

SUMMARY

Seventy nine patients who had been treated for cretinism were examined Detailed psychological tests showed that it is possible for cretins to become mentally normal The occurrence of other psychological features including traits of personality commonly called obsessional was established Comparison of present intellectual level with treatment received indicated that promptness and continuity of thyroid administration were not alone decisive in determining whether or to what extent the child would remain backward A few who had normal intelligence quotients had had inadequate treatment a few with low intelligence quotients had been treated regularly from the time their symptoms appeared In the majority however there was a rough correspondence between adequacy of treatment and intellectual level attained The other factors which influence psychological attainment were apparently the stage of development at which symptoms of thyroid deficiency appeared the degree of this deficiency the hereditary endowment of the child (as it might be inferred from the intellectual level and other specific features in his family) any cerebral damage either at birth or in infancy and the environmental influences (including special education) Problems of development as assessed in the somatic and the psychological spheres also presented themselves in the inquiry and are discussed.

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THREE CASES OF UNUSUAL ILLNESS WITH EOSINOPHILIA

ONE WITH LESIONS IN THE LIVER RESEMBLING THOSE OF TULARÆMIA

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We report these cases because we think they may represent examples of a disease hitherto unrecognised in this country

Investigations by Dr Edward Francis of the American Institute of Health Washington show conclusively that this disease is not serologically identical with the tularæmia of the United States but the histological appearances of the liver of one of our cases are so like those of granulomata due to infection with *Bacterium tularense* that we feel justified in suggesting that there may be some relation between our cases and true (American) tularæmia

Inquiry into the histories of our patients elicited the following facts Two (Cases 1 and 2) spent July August and September 1936 on holiday in south western Ireland and were joined by Case 3 for a fortnight in September During this time they did a good deal of rabbit shooting There is no evidence of any epidemic disease among the rabbits at that time None of them remembers finding any dead rabbits apart from those they had shot On the other hand, it was stated that there was an exceptional mortality among the local cats and this was confirmed later by Dr M J Twohig of Bantry, who was good enough to make inquiries for us We have, unfortunately, failed to obtain any pathological material from cats from Bantry—it may be because our efforts were too late It is impossible therefore to say with certainty whether the fatal disease in these cats had any relation to the illness of our patients

At the end of September the three cases separated—one to Malvern, one to Oxford University, and one to Cambridge University They had no subsequent contact for over two months and until their illnesses were well advanced.

Since they all suffered from abdominal symptoms and all had eosinophilia, while two had clinical signs of liver disturbance, we think it is a fair inference that they all suffered from the same disease and that that disease was acquired when they were together in September, 1936, shooting rabbits in Bantry

THE FIRST CASE

A clergyman, aged 69, referred by Dr J H D Phelps of Malvern, was admitted to the General Hospital Birmingham, on Nov 27th, 1936

Previous history—A healthy active life but subject at rare intervals, particularly when severely constipated, to attacks of rectal pain sometimes bad enough to make him faint In 1925 while on holiday in Brittany he developed diarrhœa, which persisted for one month, he passed neither blood nor slime Several members of the holiday party were affected and the illness was attributed to 'dysentery" No bacteriological investigations were made Convalescence was rapid and complete

Present illness—Early in October 1936 (about seven weeks before admission to hospital) he began to feel unwell his appetite failed and there was constant nausea, but no vomiting The bowels were costive, as usual Three weeks later he had a rigor followed by violent pain above the pubis and fainting On recovering consciousness he vomited and passed a liquid stool Ever since he had suffered from mild abdominal discomfort, with alternating diarrhœa and constipation, his appetite continued poor, the nausea persisted, and he lost weight For some days before admission (and possibly earlier) he had slight fever at night with a temperature usually between 99° and 100° F

Examination—Healthy appearance looking rather younger than his age Physical examination completely negative apart from a spermatocele on the right side which had been present for many years Temperature 98° F, pulse 80, respiration 20, blood pressure 142/90, arteries in good condition no obvious anæmia

Progress—From the history, carcinoma of the colon or diverticulitis was suspected The stools were examined on several occasions and no blood was found radiological examination of the colon after a barium enema was normal (Dr C G Teall), a serological test for cancer was negative (Mr D L Woodhouse Ph.D) Four days after admission (Dec 1st) his temperature at night was raised for the first time in hospital to 99° (it remained at this level for ten nights but in the mornings it was consistently normal) In view of the slight pyrexia and the negative result of preliminary investigations further examinations were carried out

Laboratory investigations—Cultures of the stools showed nothing abnormal His blood serum gave no agglutination with the typhoid or paratyphoid groups, the salmonella group (aertrycke), *B enteritidis* Gaertner dysentery group (Flexner V W X Y Z Shiga, Sonne) or brucella group (*Br abortus* Bang *Br melitensis*) (Dr W T Hillier) A radiogram of the chest was normal A cholecystogram showed impaired concentration but no evidence of stone The most striking and indeed the only significant discovery was a very pronounced eosinophilia, which remained when he appeared fully convalescent (Table I)

TABLE I—*Blood Counts*

—	December 1936				1937
	2nd	8th	15th	31st	Apr 1st
Leucocytes	11 160	9 320	22 640	9 120	—
Lymphocytes	17 %	14 %	20 %	20 %	40 %
Monocytes	5 5 %	3 5 %	2 5 %	0 %	3 5 %
Unsegmented polymorph and polymorphonuclear cells	34 %	32 5 %	20 %	39 %	45 %
Eosinophil cells	43 5 %	50 %	57 5 %	32 5 %	11 %
Mast cells	—	—	—	2 5 %	0 5 %

In view of the eosinophilia the stools were carefully examined for parasites but none was found On Dec 10th he began a course of five daily injections of emetine hydrochloride one grain on Dec 12th his temperature remained normal at night and did not rise again He was discharged from hospital on Dec 15th and made a quiet and fairly rapid convalescence

No certain diagnosis was made at the time of his discharge, various possibilities were considered—amœbic hepatitis (following the "dysentery" in Brittany ten years previously, on this account the emetine was given), Hodgkin's disease and periarteritis nodosa None of these appeared to offer a satisfactory explanation of his condition.

THE SECOND CASE

An Oxford undergraduate, aged 19, *the son of the first patient (Dr Phelps)*

Previous history—No illness of importance One of a healthy family, a younger brother and sister are well No history of tuberculosis

Present illness—In October, 1936, shortly after his return to Oxford, he was vaguely unwell with slight indigestion and flatulence but he was able to go into strict training and row in a strenuous race at the end of November The day after the race he felt weak and ill Later he lost all energy and vitality, his appetite failed and he began to waste His illness was at first attributed to excessive physical strain, but he was soon found to be constantly feverish at night (temperature usually about 100° F) and occasionally he had severe sweats

Before his return home his father (Case 1) had been admitted to the General Hospital, Birmingham, and there was no contact between them for over two months In view of the puzzling nature of his father's illness Dr Phelps was asked to send a film of his blood and this showed an eosinophilia of 47 5 per cent No parasites were found in a specimen of the stools

Towards the end of December the illness became much more serious, the temperature was higher—sometimes reaching 103° F at night there was pain on both sides of the chest and in the right shoulder region he had a troublesome cough without sputum Dr Phelps found some moist râles at the right base The wasting was alarming, from 12 st 4 lb to 10 st 10 lb in the course of a few weeks He was seen by one of us (A P T) in consultation at his home on Dec 26th His temperature had been 104° F the previous night and was swinging erratically there was slight constipation, the urine was normal He looked gravely ill and was very pale Impaired percussion low down in the right axillary region, a poor air-entry at the right base, some epigastric tenderness on pressure and a palpable liver 2 in below the costal margin were the only significant findings on physical examination It seemed possible that he had a subphrenic abscess though this did not account satisfactorily for the eosinophilia or for the fact that his pulse had been slow throughout his illness He was admitted to the General Hospital, Birmingham on Dec 27th 1936

Radiography (Dr J F Bromley) showed that the lung fields were clear, the right side of the diaphragm was displaced upwards and the liver shadow was enlarged

A blood count showed marked leucocytosis and the eosinophilia though still apparent was less

Operation—The following day he had sharp upper abdominal pain after turning in bed the epigastric tenderness was increased and there was slight rigidity of the abdominal muscles Our colleague Mr J B Leather saw him and agreed that there was probably some acute inflammatory condition in the upper abdomen Laparotomy was undertaken immediately The liver was greatly enlarged and scattered over its surface were numerous nodules of a white or faintly yellow colour; their size varied from that of a pin head to about a quarter of an inch in diameter In places the nodules had coalesced to form large plaques and in others they were arranged in linear fashion as if along the course of vessels They were firm to the touch The spleen was not seen but appeared to be normal on palpation Here and there along the wall of the intestine were found nodules similar to those in the liver but in general rather smaller

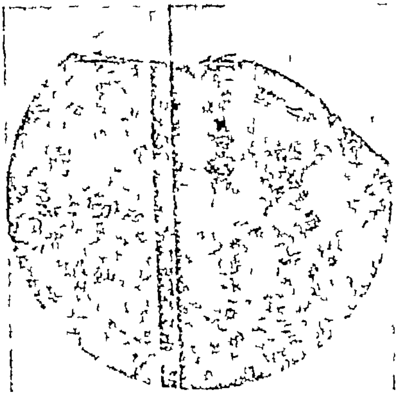

FIG 1 —Liver nodule (× 20)

TABLE II —*Blood Counts in Case 2*

—	December 1936			1937	
	10th	28th	30th	Jan 20th	Apr 1st
Red corpuscles	—	4 91 000	3,805 000	4 955 000	—
Leucocytes	—	1 400	16,200	7,000	—
Hæmoglobin	—	88	74%	86%	—
Lymphocytes	8·5%	15%	10%	20·5%	9%
Monocytes	2%	4%	3%	2·5%	3%
Unsegmented polymorphs	2%	6%	4%	—	—
Polymorpho-nuclears	40%	1%	65%	31·5%	56%
Eosinophil cells	47·5%	5%	17·5%	41%	13·5%
Mast cells	—	—	0·5%	1·5%	0·5%

Mr Leather thought the condition might be an unusual form of tuberculosis but in view of the history the rarity of macroscopic tuberculosis in the liver and of the fact that the appearance was not characteristic he consented to remove one of the nodules from the liver for detailed examination

Further course and investigations.—The temperature fell to subnormal for four days after the operation but the general condition remained very poor On the fifth day it rose to 99° F and then by steps reached 103° F on the ninth day In view of the apparent good effect of emetine in his father (Case 1) daily injections of 1 grain were given, and the fever declined steadily On the thirteenth day it was normal and remained so until he left the hospital on Jan. 26th 1937—apparently convalescent but still weak On discharge the liver was still easily palpable but much smaller Blood counts showed a persistent eosinophilia and in the acute stage leucocytosis with secondary anæmia (Table II)

Agglutinations against the typhoid dysentery and abortus groups were all negative Neither tubercle bacilli nor parasites were found in the stools Blood cultures were sterile Guinea pigs inoculated with his blood and urine showed no pathological lesion when killed a month later

Fresh preparations from the specimen removed at operation showed disintegrating cells and numerous Charcot Leyden crystals (presumably a consequence of disintegration of the eosinophils) Coccidia were not found though this possibility was carefully investigated by Dr W T Hillier

THE THIRD CASE

A Cambridge undergraduate aged 20 who spent a fortnight in Ireland in September with the first two patients This young man had an illness which his physician Dr Dundas Simpson regarded as mild catarrhal jaundice In reply to a letter of inquiry he gave the following account of his experience

> So far as I know my illness was a light attack of ordinary catarrhal jaundice The first sign I think appeared on Tuesday Nov 10th when I was badly constipated and passed urine of a darkish yellow brown colour this did not alarm me at all as I felt fairly fit, but in a day or two violent diarrhœa followed the stools being of an exceptionally light colour on Saturday evening Nov 14th after a day when I hardly touched any food except dry biscuits and during which I had felt extraordinarily sleepy my bedmaker told me that my eyes were all yellow and that she thought I had jaundice; the next morning I went to the college nurse who recognised jaundice as soon as she saw me I went to bed and the doctor soon came I told him all as related above and he put me on a diet from which all fats were excluded; also calomel pills (2 grains nightly) and salts in the morning I spent ten days in bed and a fortnight confined to my room; after this I kept up my diet for three weeks. The only other symptoms that I myself know of were a slow pulse and a slight itch which lasted for about two days At no time did I feel really ill though I had one or two rather nauseating moments the day before I went to bed

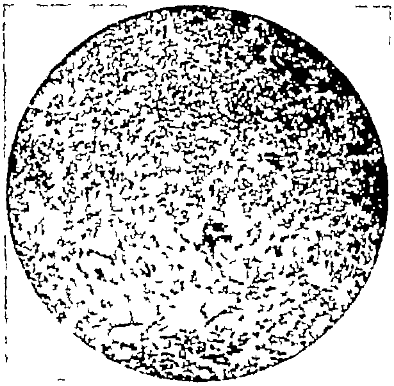

FIG 2 —Liver nodule (× 50)

On Jan. 4th 1937 when the patient was apparently quite well Dr W M Cummins of Cork kindly sent us a blood film and this again showed definite eosinophilia as follows —

Lymphocytes	40 per cent
Monocytes	4
Unsegmented polymorph cells	—
Polymorphonuclear cells	46
Eosinophil cells	9 5
Mast cells	0 5

PATHOLOGICAL INVESTIGATION

The portion of liver removed at operation in Case 2 contains a number of small pale nodules with an average diameter of about 1 5 mm Under a low power (Fig 1) these present a superficial resemblance to tubercle follicles in that there is a necrotic centre infiltrated by polymorphs, surrounded by a cellular area with a number of multinucleated giant cells, and demarcated from the surrounding liver tissue by a zone of fibrous tissue in which numerous lymphocytes are seen More critical examination under a high power, however, reveals a number of striking discrepancies from which it is clear that the lesion cannot be an ordinary tuberculous process

In the central necrotic area the outlines of dead cells are still recognisable and along with the polymorphs there are numerous mononuclear cells and a few eosinophils Structures resembling Charcot-Leyden crystals, possibly derived from the disintegration of eosinophils, are also present The intermediate cellular zone (Figs 2 and 3) shows elongated cells with pale vesicular nuclei and scanty protoplasm, rather irregular in outline and resembling neither fibroblasts nor the endothelioid cells of a tubercle follicle These are arranged in a somewhat radial and palisade fashion and their characters suggest an origin from the reticulo endothelial system In this zone also there are wandering mononuclear leucocytes and multinucleated giant cells Some of these have well defined outlines (*Fig* 2) and protoplasmic tendrils extending amongst adjacent cells, while others are much less defined and resemble multinucleated plasmodia (Figs 3 and 4) In some instances vacuolation is present but there is no evidence of phagocytosis The peripheral zone consists of a vascular rather hyaline fibrous tissue with a considerable number of lymphocytes In some of what appear to be older and healing lesions the fibrosis extends inwards and the central necrosis is more extensive In these the palisade structure has to a large extent disappeared

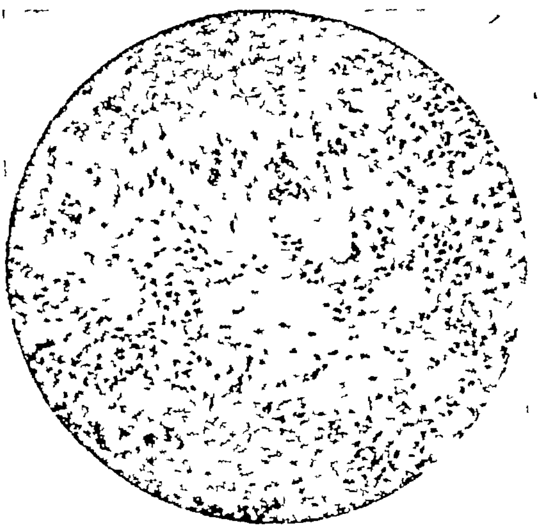

FIG 3 —Liver nodule (× 100)

In sections stained by Foot's modification of the Hortega silver carbonate method delicate argentophil reticulum fibrils appear between the palisade like cells of the intermediate zone and further out these fibrils are condensed into a peripheral feltwork which encloses the entire lesion Here the fibrils are beginning to take the van Gieson counterstain, and the appearances indicate that the lesion is undergoing fibrosis from without inwards

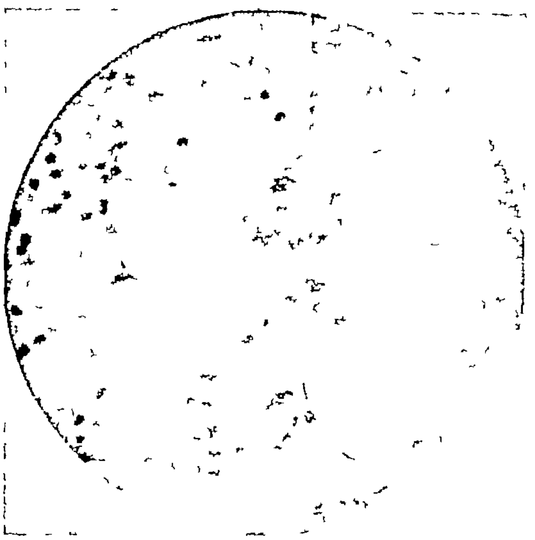

FIG 4 —Liver nodule (× 250)

Examination of the tissue for tubercle bacilli or other micro organisms, and for protozoal parasites proved negative

The microscopical appearances in this case closely resemble the lesions described and illustrated by Francis and Callender (1927) as characteristic of tularæmia, and are quite unlike those of any other granulomatous process known to us

A section was sent to Dr Francis, and he submitted it to Dr R D Lillie, of the National Institute of Health, Washington, D C, for examination His description of the lesion is in accordance with our own, and he comments that 'The process is not inconsistent with tularæmic foci in the second month of a non fatal illness" He was not prepared, however, to make a positive diagnosis on histological appearances alone

In view of the remarkable resemblance of the liver lesions to those of tularæmia, serological investigations from this point of view were continued The only antigen available was a killed non virulent culture of *Bact tularense,* which was kindly supplied by the Lister Institute of Preventive Medicine With this there was no agglutination by the sera of the first two cases (Dr W T Hillier) Dr Henry kindly carried out complement-deviation tests with this culture and obtained a strongly positive reaction with the serum of Case 2, during the acute phase of his illness, and a weakly positive reaction with that of Case 1 when he was convalescent Two control sera were entirely negative We cannot draw any inference from these observations for we have no information regarding the application of the complement deviation test in the diagnosis of tularæmia

Specimens of the sera of Cases 1 and 2 were sent to Dr Francis of Washington, and, as already stated, he obtained no agglutination of his proved cultures of *Bact tularense* with them This negative result was confirmed here at a later date by Dr J F D Shrewsbury, with sera from the same patients when they were convalescent and a killed suspension of *Bact tularense* supplied by Dr Francis

It was suggested to us by Dr Francis that our cases might have been anomalous forms of trichinosis and he sent us some material for intradermal tests These were complet ly negative in Cases 1 and 2, and in April 1937 numerous radiograms of the muscles of both patients showed no signs of any calcified cysts Clinically our cases did not suggest trichinosis and the histology of the liver of Case 2 was quite unlike it A few cases of this disease have been recognised in Birmingham in recent years and our colleague Dr T L Hardy reported a group of them

COMMENTARY

Recent reports from Vienna (Beiglbock 1937 David 1937) describe a considerable epidemic of tularæmia in Austria during 1936 which bacteriologically and serologically was identical with the American type but in this epidemic cross agglutination with *Brucella abortus* was extremely rare and then only in titres up to 1 in 50 If it be correct that sera from these cases only occasionally produced cross agglutination with *Br abortus* it follows that agglutination may be specific for individual members of the brucella group In spite therefore of the fact that the bacteriological and serological investigations of our cases was negative with the exception of the positive result from the complement deviation test we feel that the histological changes in the liver of Case 2 which in all respects exactly resemble those reported in human and experimental tularæmia should not lightly be set aside It is theoretically at least possible that if our cases were not infected by *Bact tularense* they may have been infected by some hitherto undiscovered member of the brucella group of organisms

In neither the American nor the Austrian reports have we found any mention of eosinophilia which was so remarkable a feature of our cases It is true that there are only a few descriptions of the blood picture in the literature of tularæmia but it is unlikely that gross eosinophilia could have escaped detection

We do not feel justified in forming any definite opinion at the present stage but we publish the account of these cases in the hope that it may direct attention to the possibility that obscure cases of illness in this country particularly in rural areas amongst those shooting or handling rabbits or who have been in contact with diseased cats may be the result of infection either by *Bact tularense* or by some other organism of the brucella group

We shall be glad to investigate material from any suspicious cases of this kind and also from cases of human illness occurring in association with sickness in cats Specimens of blood serum and blood films should be addressed to the Pathological Department, The University Gt Charles street Birmingham

It may be convenient to summarise at this stage the chief clinical features of tularæmia as reviewed by Pessin (1936) There are three types

(1) The (most common) ulceroglandular type in which a papule forms at the site of an abrasion or insect bite and is followed by local necrosis and much swelling and caseous softening of the regional lymph glands

(2) The ocular type in which the main lesion is intense conjunctivitis with gross involvement of the lymph glands

(3) The septicæmic type with anomalous symptoms.

In addition the Americans have more recently described cases in which the predominant symptoms were pulmonary (tularæmic pneumonia and pleural effusions) in Austria a considerable number have had severe sore throat with cervical adenitis In all forms the constitutional symptoms may be severe and in general convalescence is very slow and prolonged invalidism follows

The diagnosis is established either by a positive agglutination against the specific organism or by animal inoculation direct culture is rarely successful. The total mortality of the established cases appears to be about 5 per cent The incidence of the disease is uncertain In America in the ten years to 1934 5426 cases were recognised—many more were certainly missed

SUMMARY

Three cases of obscure illness are described All the patients had eosinophilia

The first had symptoms of irritability of the colon and mild fever for some weeks. The second had prolonged and more severe fever with symptoms of an acute abdominal crisis and signs of a right subphrenic abscess for which a laparotomy was done the liver was found to be grossly enlarged and infiltrated with granulomata which microscopically showed the changes hitherto regarded as characteristic of infection with *Bact tularense* The third had an attack of what appeared to be simple catarrhal jaundice

All three patients had been shooting rabbits in south western Ireland at the end of September 1936 and for ten days were in intimate contact The first two patients had been shooting together in the same area for over two months previously There is no evidence of any epidemic plague among the rabbits but the local cats were dying in unusual numbers at the time The first two patients gave negative agglutinations to *Bact tularense* and negative skin tests for trichinosis Careful search for parasites was negative The possible existence in the British Isles of infection with *Bact tularense* or some allied organism is suggested.

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NON PARASITIC EXTRADURAL CYST OF THE SPINAL CANAL

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AN extradural non parasitic cyst is one of the rarest causes of spinal compression. Elsberg (1925) included only 3 in his great series of 250 tumours of the spinal cord and only 11 are so far recorded, including the present case

The symptoms and signs have been so similar that it is possible to present a definite clinical picture which ought to allow of pre-operative diagnosis The main points in the syndrome (youth relatively rapid onset, the paradox of X ray evidences of congenital or long-standing dilatation with a short clinical history) are all exemplified in the following record.

CASE RECORD

A boy aged 15 was admitted to the Manchester Royal Infirmary on Dec 7th 1935 under Dr F R Ferguson complaining of paralysis of his lower limbs.

His previous medical history had been uneventful except for colds and an attack of tonsillitis when about to be so valuable in the diagnosis of spinal tumours, a value not yet widely recognised Kubie and Fulton (1928) and Bucy and Buchanan (1935) have shown that a similar or greater enlargement may occur with spinal teratomata but with this condition the patients usually show their first signs in early childhood rather than in adolescence Cloward and Bucy (1937) have suggested that the cause of the osteochondritis and the juvenile kyphosis is the pressure of the cyst on the venous drainage from the vertebræ In a later radiogram of their patient the pedicles were noticed to have become thickened out again At the review of the present case one year later there was no evidence of osteochondritis, and the thinning of the pedicles had completely disappeared, their width appearing to be normal again

The actual origin and mechanism of the dilatation are interesting points for speculation. The content of the cysts has been examined in only one case besides that now recorded (Elsberg's Case 3) and in that it was normal, and the same as the lumbar cerebro spinal fluid The content of the cyst in the present case was normal C S F, and the fluid below the cyst showed no chemical evidence of tumour age into it, the chemistry remaining normal. e points suggest that the cyst was in communica with the normal C S F Elsberg conjectured there might be a free communication, though rently he thought his cases were closed, but the t of attachment is so small and the calibre of the munication so narrow that it might be over- ed. The almost complete block on Queckenstedt and the normal chemistry appear to confirm suggestion. The origin would seem to be from an hnoidal prolongation around the posterior root, nating backwards through a congenital defect, is case upwards, as a finger like process Once passed beyond a small size a very small neck ld prevent the easy return of C S F from it hat it must finally compress the spinal cord hanically the cyst at first would fill, and then lexion of the spine would be compressed so as rce some of the fluid out This evacuation would lone against the resistance of the narrow neck. dura constricting that neck being strong and the al sac weak, this action would not only enlarge cyst and gradually increase the compression, would keep the neck open and normal C S F he cyst The constant swirl of C S.F at the would keep that region in complete circulation, the part below the cyst might in some cases me stagnant

is case is from the neurosurgical service of the chester Royal Infirmary, and I am indebted to Mr rson for his permission to publish it

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ISHOP AUCKLAND COTTAGE HOSPITAL.—This hos- l has to be rebuilt The new building and equipment cost £20 000, of which the Commissioner for Special as has promised to provide three quarters

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THE TREATMENT OF CARBUNCLES

BY GERALD OVENS, M B Lond, F R C S Eng

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THE modern tendency towards more conservative treatment of acute infections, coinciding with the appearance of specific antisera on the market has led me to adopt a fairly standardised procedure in treating carbuncles The results have been good

SPECIFIC THERAPY

During the last few years specific antitoxic sera have been used in many staphylococcal infections, particularly in osteomyelitis, but the benefit gained has often been doubtful Dolman (1934), however, does not exaggerate when he says that "carbuncles and staphylococcal infections of the skin and sub cutaneous tissues may undergo rapid and dramatic improvement following intramuscular administration of the serum" I inject 6 0 c cm of anti staphylococcal serum intramuscularly as soon as a carbuncle is diagnosed Exceptionally (in about one fifth of the cases) the same dose is repeated after three days, but it is rarely needed a third time Other methods have been tried—such as larger initial doses and intravenous administration—but these are unnecessary and intravenous injection is more apt to produce reactions

The most striking effect of the serum is the complete abolition of *pain* within 12–24 hours Although this relief is not so rapid as that which follows incision, the many disadvantages of incision—especially the need for a general anæsthetic—outweigh this advantage Usually a mild analgesic, such as aspirin and phenacetin, will secure rest and sleep during this period, but there need be no hesitation in using a small dose of morphia if necessary, since it will not have to be repeated The general condition of the patient improves forthwith, and in the absence of complications the temperature returns to normal within 48 hours, toxic glycosuria, if present, usually takes a day or two longer Changes in the local condition of the carbuncle are no less striking Within a few hours the indurated surroundings become soft and fluctuant, while the centre, instead of being filled with plugs of semi-solid pus, becomes diffluent, and a profuse discharge occurs In areas where it appeared to be spreading the inflammation regresses, while among the necrotic debris on the surface will be discovered many unexpected patches of living epithelium It is the survival of these islands of epithelium that accounts for the shorter course of the disease and the better scar Incision, and to a less extent antiseptics, must destroy many of them

Complications due to the serum are rare An urticarial rash appearing almost always on the 8th day and lasting a few hours has been noted in about one case in six, out-patients are warned of this I have seen one case of serum sickness but no severe *reactions*

LOCAL TREATMENT

A dressing of adhesive strapping, such as Elastoplast, is now used exclusively It is applied directly over the carbuncle and also includes a large area of the surrounding skin Thus on the trunk and limbs the strapping extends 4–5 in. beyond the indurated area in all directions, while for facial carbuncles numerous narrow strips are used and as much healthy skin included as possible For example, if the esion is on the upper lip both lips and the whole heek of the affected side must be securely strapped; he tendency is to cover too small an area rather than oo much Hairy parts such as the back of the neck must be shaved over a large area first and if a greasy ressing has been previously applied it is gently leaned off with spirit No other preliminary cleansng is done

Among the *advantages* of this form of dressing are he following: (1) Carbuncles are usually on parts of he body where the principle of rest is hard to apply t is exceedingly difficult to splint the face or back of he neck adequately Further a carbuncle is situated n the skin and subcutaneous tissues and although sticking plaster will give little or no support to deep structures such as bones or muscles it will act as quite an efficient splint for the skin In fact except for paints such as collodion it is the one substance that will do so It is only necessary to put a piece of it anywhere on the skin to have painful proof of the restraint it exerts whenever any attempt is made to move that part We have therefore as far as possible applied local rest to our carbuncle (2) We also rest it by diminishing the number of dressings required The sticking plaster is renewed only when it has become sodden with discharge It will be found that after a time the accumulated fluid lifts it away from its moorings to the skin and when this has happened it is no longer behaving as a splint and should be changed Owing to this layer of fluid which separates it from the surface of the carbuncle its removal is easy and painless For the first few days one change in each twenty four hours is usually needed but later it can stay untouched for three or four days Oozing at the lower edge of the strapping or seepage of a few drops of pus should be treated by bandaging a thick layer of wool over the whole area while the strapping itself is left intact (3) The sticking plaster by its mildly irritant action produces a hyperæmia in the surrounding skin and thus improves the local blood-supply

There are two possible disadvantages (1) Some patients cannot stand any form of adhesive on their skin. I have had one case where this method of treatment had to be abandoned and dry dressings substituted (2) Occasionally 'satellite boils form under the strapping These, however disappear as the carbuncle heals in fact the same dressing that heals the carbuncle will heal its satellites also It is logical to assume that if the patient's resistance can deal with the large primary lesion it can deal with the smaller secondary lesions at the same time

ACCESSORY METHODS

Of the accessory methods of treatment such as irradiations and injection of metals, only two have been found to be of value. True diabetics are of course put on a suitable diet and given adequate doses of insulin but even in non diabetics if the carbuncle is extensive and particularly if there is a toxic glycosuria 5 units of insulin three times a day for a week or ten days may be of some benefit. In some cases especially those of long duration small doses of ultra violet irradiation appear to improve the general condition

Facial carbuncle is so dangerous that the patient must always be admitted to hospital however trivial the lesion seems To secure rest for the carbuncle the patient should be (1) forbidden to speak, and (2) put on a fluid diet sucked through a straw When it is remembered that the muscles of expression are attached to the skin in which the carbuncle is situated the advantage of these rules is obvious Incidentally the use of a straw largely prevents soiling of the dressing

SUMMARY AND CONCLUSION

Recovery from carbuncle is aided by (1) injection of antistaphylococcal serum and (2) local rest for the skin obtained by applying adhesive strapping

In conditions of this kind it is both difficult and fallacious to assess statistically the value of any particular form of treatment, and no attempt is here made to do so Some forty cases have now been treated by this method My experience is confined to cases referred to hospital and these are usually severe The fact that they have been referred implies that their own doctor has considered in patient treatment necessary but as confidence in the method has grown an increasing proportion of the lesser cases have been successfully treated as out patients

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A CASE OF PSEUDO HERMAPHRODITISM AND ITS TREATMENT

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A B aged 7 apparently a normal girl was admitted to the District Infirmary Ashton under Lyne on Nov 24th 1936 The history was that a year ago after a fall from a car there had been a small swelling in each groin and these had increased considerably in size in the past two months Examination showed the presence of bilateral reducible inguinal hernia. Nothing else abnormal was noted and a diagnosis of bilateral inguinal hernia was made. At operation on Nov 26th 1936 the left inguinal canal was first explored, and in addition to the hernial sac an undescended testis was found It was of normal size for a male child of the same age and was easily reducible into the abdominal cavity There was a clearly defined vas deferens Orchidectomy was performed and before proceeding to the other side a careful examination of the patient was made The pelvis showed normal female characteristics The mons pubis was prominent and there was a wide pubic angle The labia majora and minora were normal as was the clitoris A normal hymen was present and the vagina extended to a depth of about 1½ in and had a diameter of about ½ in. which was considered normal for the child's age The operation was continued and a testis found on the other side was also removed Recovery was uneventful. Subsequent histological examination of the testes showed them to be of normal testicular structure

It may be mentioned here that after this operation when it was suggested to the father that from the operative findings a laparotomy was considered advisable he immediately asked whether such findings had to do with her sex In explanation he said that she appeared strange at times as compared to either her older or younger sister He could not define the strangeness

On Dec 10th 1936 a laparotomy was performed There was no sign of the uterus of either uterine tube, or of either ovary A peritoneal fold corresponding to the round ligaments in the female crossed the pelvic floor from one to the other internal abdominal ring and presented a thickening at the base of its mid part The depth of the ligament was about 1½ in and it resulted in the formation of two peritoneal pouches, corresponding to the pouch of Douglas and the uterovesical pouch In each extremity of this peritoneal fold was the corresponding vas deferens which continued about half way towards the midline before gradually becoming indistinguishable The appendix was long and twisted and was removed Recovery was uneventful

THE TREATMENT

In discussing this case probably the most important feature is the treatment The child was a male having two undescended testes But, on the other hand, she had been brought up as a girl and had a female pelvis, and the external genitalia were those of a normal female child. Had the testes been retained, secondary male sex characteristics would have developed at puberty—namely, male pubic hair, alteration in voice, and facial hair, also enlargement of the clitoris would probably have made operation necessary By removing the testes those factors that produced her present female status are allowed to work unopposed It has been advised that she be given a course of ovarian hormone medication at puberty She will also be told that she will not menstruate nor become pregnant, but that otherwise she may live a normal female life

It might be considered that the bilateral orchidectomy was unwarranted and too radical a procedure, but it is in accordance with the teaching of Blair Bell (1935) that when the external genitalia and secondary sex characteristics are feminine, and the child has been brought up as a girl, removal of the testes is correct practice

From published cases I have selected three that illustrate different points in the treatment and results The first two are described by Mackenzie (1934) and the third by Young (1936)

1 Mackenzie's first patient was a child aged 1¼ years admitted and operated on for a left inguinal hernia Examination showed that, except that there were no testicles in the scrotum the external genitalia were those of a normal male child In the inguinal canal was found what appeared to be an ovary and uterine tube By drawing on these, the fundus of an infantile uterus was first brought into view, followed by the other uterine tube and ovary As a result of the operation the parents were advised that they should consider the child a female When she was 3 years of age another consultation of the honorary staff resulted in the further advice that as the external genitalia of the child were essentially male, he should be sent to school as a boy He appeared again at the age of 27 and was admitted to hospital with severe lower abdominal pain A preoperative diagnosis of torsion of a retained testis was made and laparotomy was performed Nothing to account for the acute symptoms was found Gonads on each side of an attenuated uterus were found and tissue from these was removed for histological examination The report on the former was "imperfectly formed testicular tissue," and on the latter "characteristic uterine muscle and endometrium"

As regards treatment there are two essential differences between this case and the one I have reported above These are (1) the presence of a penis and absence of a vagina and (2) the presence of gonads which were at first considered to be ovaries It was felt necessary to temporise in Mackenzie's case until the secondary sex characteristics developed and indicated the further treatment that might be required The patient, actually a male, is certainly better left alone, even though there was a uterus present, indicating his pseudo hermaphroditic state

2 Mackenzie's second patient brought up as a female, later developed male secondary sex characteristics At the age of 18 she had a hypospadic phallus corresponding to the penis of a boy of 7 years and a vagina which had a depth of 1 in and a diameter of ½ in There was in each inguinal region a mobile tender mass (probably a testis) Five years later she found it necessary to shave daily and there was a perceptible alteration in her voice It is probable that had a laparotomy been performed before puberty and gonads (if testes) removed, the secondary male sex characteristics would not have developed and her social outlook would thus have been improved A plastic operation on the vagina would probably have been justified at a later date

3 The third case I shall quote is one among those reported by Young A pseudo hermaphrodite, brought up as a female was first examined at the age of 18 At this time she had an enlarged clitoris amputated, and bilateral orchidectomy performed (The testes were found in, and removed from, each inguinal canal) Afterwards she had a plastic operation to enlarge the vagina which had a depth of only about 2 in A laparotomy showed the absence of uterus, uterine tubes, and ovaries As a result of the vaginal operation, during her subsequent married life, sexual intercourse was satisfactory

This last case presents features identical to those of the one I have reported here, but the essential difference is that the removal of the testes was necessarily not performed until after puberty, and male secondary sex characteristics developed, to the disadvantage of the patient

Finally it may be pointed out that, if the child A B had not had a patent processus vaginalis, the partially descended testes would probably have been overlooked until after puberty She would then have developed male secondary sex characteristics, as in Case 3, and would be in a correspondingly less favourable situation

CONCLUSION

The object of this paper is to suggest that in a case of pseudo hermaphroditism such as that described, where the external genitalia and the patient's perspective are essentially feminine, treatment should be directed towards the continuance of the patient's present status, always with a view to the future development of untoward sex characteristics

I am indebted to Mr F G Ralphs for permission to publish a report of this case

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CHRONIC HÆMOLYTIC STREPTOCOCCAL INFECTION TREATED WITH *p*-AMINOBENZENESULPHONAMIDE

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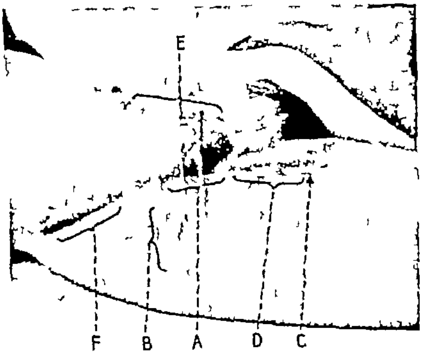
Much attention has recently been paid to the treatment of acute hæmolytic streptococcal infections, particularly puerperal, with Prontosil and allied drugs (Colebrook and Kenny 1936, Foulis and Barr 1937) but little work has been published on the treatment of chronic infections with these substances The case now reported is of interest in view of its extreme chronicity and the rapidity with which it responded to treatment with one of these drugs The preparation used was *p*-aminobenzenesulphonamide (Streptocide Evans Lescher and Webb) kindly supplied by the makers for an investigation being carried out at Queen Charlotte's Maternity Hospital.*

HISTORY

A primiparous woman aged 26 was admitted to Queen Charlotte's Hospital Isolation Block on March 26th 1934 on the sixth day of the puerperium following an uncomplicated spontaneous twin delivery She had had pyrexia since the third day

On admission her general condition appeared fairly good The abdomen was not tender and moved freely on respiration There were minor lacerations of the perineum vagina and cervix The uterus was subinvoluted but not tender and there was no extragenital spread of the infection The lochia were purulent Cultures from a high vaginal swab showed a heavy growth of hæmolytic streptococcus The urine contained pus and *Bacillus coli* Blood culture was negative



The incisions (after treatment)

Six days after admission she complained of some abdominal pain and slight tenderness was noted in the left iliac fossa The next day pain was felt in the right side of the abdomen, with tenderness in the right iliac fossa a small right-sided extragenital spread was demonstrated On the 18th day of the puerperium a left sided extragenital spread was present This left-sided mass resolved gradually but the mass on the right became larger

On the 66th day of the puerperium 7½ weeks after admission it was decided that the mass in the right iliac fossa which appeared to be a cellulitis of the fascia over the psoas and iliacus muscles should be explored extraperitoneally There was at this time some *flexion of the right hip* attributed to spasm of the iliopsoas, and full extension was not possible An exploratory incision marked A in the Figure was made and a large abscess cavity was entered pus escaping freely The temperature which had been febrile since admission became normal on the 6th day after this operation (75th day of the puerperium) and continued so apart from three days pyrexia till the 130th day when a low grade pyrexia began and lasted till discharge from the hospital on the 179th day of the puerperium

On the 130th day a radiogram of the pelvis showed no sequestrum or necrosis of the pelvic bones The same day under local anæsthesia incision B was made communicating with A in order to establish free drainage in the *dorsal decubitus position* On leaving hospital both these wounds were discharging and showed no sign of healing

Cultures on many occasions showed hæmolytic streptococcus Several examinations of the pus for *B tuberculosis* were negative and the Wassermann reaction was negative

In March 1935 a year after delivery she was admitted to a general hospital and wounds A and B which had become partially bridged over were fully opened up A rubber drainage tube was inserted into wound A tunnelled under healthy skin and brought out at point C She left hospital seven weeks later No healing occurred and the skin between wound A and point C broke down, leaving a larger wound D

In April 1936 she developed acute appendicitis and appendicectomy was performed through incision E This incision did not heal by first intention and was not finally closed till three months later

In July ultra violet radiation was tried on the open wounds without success In September an abscess developed in the right flank and was opened through incision F This also failed to heal During this long period several radiographic examinations were carried out but failed to demonstrate any lesion of the pelvic bones or right hip joint

TREATMENT WITH SULPHONILAMIDE

Nearly three years after delivery on Feb 15th 1937 she was readmitted to Queen Charlotte's Hospital Isolation Block

She looked well and was apyrexial but wounds A D and F were discharging sero purulent fluid A and D were together 6½ in in length and ¼ in in depth F measured 3½ in in length and 1¼ in. in depth A culture from these wounds showed a pure growth of hæmolytic streptococcus but this organism was not found in cultures from the cervix. This organism and the streptococcus isolated three years previously were compared serologically They were both members of Lancefield's group A (1933) and of Griffith's type 11 They thus appeared to be identical

The patient remained in hospital for 19 days during which time she received 56 0 grammes of streptocide orally in doses of 1·0 g three times daily For one week in addition to the oral administration of the drug the wounds were irrigated daily with 1 per cent solution of streptocide and after irrigation dusted with streptocide powder After four days' treatment the discharge from the wounds became less On leaving hospital there was very little discharge and the wounds were definitely healing

After discharge from hospital she continued to take the drug orally at home in doses of 1 0 g three times a day at first and later twice daily till a further 38 0 g had been taken

On March 10th 23 days after treatment began the wounds were almost healed and cultures from them were sterile By April 1st in 44 days healing was complete

DISCUSSION

This case has been reported because of the rapidity of cure of some infected wounds of very long standing Since two of the wounds E and B had healed spontaneously such cure may of course have been a mere coincidence but the improvement so soon after treatment began makes it in our opinion hard to invoke this as the whole explanation

How far the local treatment of the wounds with streptocide in solution and powder contributed to the cure is an open question It was admittedly a shot in the dark but it seems to us to have some interest if only in view of the complete absence of any irritant or toxic effects

While the drug was being administered in hospital no toxic effects were observed nor were any subjective phenomena experienced. On returning home the patient resumed an active life whilst continuing to take 1 0 g of streptocide three times daily, at 8 A.M., 1 P.M., and 8 P.M. After the morning and midday doses she felt dizzy and light-headed. Because of the absence of symptoms after the evening dose, when she had finished her day's work and was resting, it was subsequently thought advisable to give only two doses each day, one at 6 P.M. and one just before going to bed. No further untoward symptoms were experienced after this change.

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* The full results of this investigation are to be submitted shortly to the Therapeutic Trials Committee of the Medical Research Council with a view to publication as a report to the Committee

SUMMARY

A case of chronic wound infection due to the hæmolytic streptococcus, following puerperal sepsis due to the same organism three years previously, is described. Various operative procedures and actinotherapy had failed to give any relief.

Administration by mouth of *p* aminobenzene sulphonamide, 94 0 g in all, with local treatment with the same drug was followed by sterilisation of the wounds within three weeks and complete healing in six weeks.

Our thanks are due to Dr Dora Colebrook for assistance with the serological investigations.

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AN IMPROVED TYPE OF UNIVERSAL FRACTURE FRAME

BY W E JOSEPH, M B Camb
CHIEF ASSISTANT TO THE WHIPPS CROSS HOSPITAL, LONDON

THE number of cases of injury to bones and joints nowadays far exceeds any previous figure in times of peace. Hospitals and nursing homes all over the country receive a constant stream of these cases, many of them requiring immediate and prolonged treatment, and in spite of all efforts on the part of the authorities the number shows little signs of decreasing. Such injuries cannot be treated efficiently without the proper instruments and appliances being available, and one essential item is a framework over the bed on which limbs and splints can be suspended. Many types of frames have been devised, from the original wooden Balkan beam to more complicated structures. These have all served their purpose to a certain degree, but have not been wholly satisfactory for any and every occasion, being too weak, too complicated, too expensive, or too limited in their application.

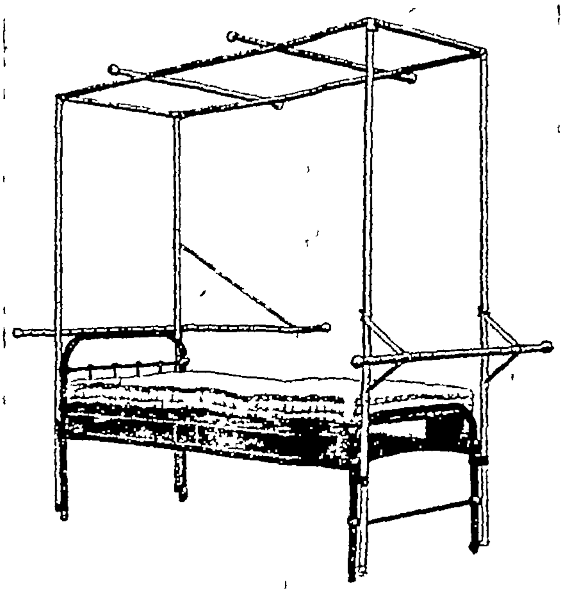
In designing this frame, which was demonstrated before the orthopædic section of the Royal Society of Medicine, I have tried to produce something that would combine all the advantages and none of the disadvantages of other frames, being at the same time simple in construction and cheap to manufacture.

The advantages claimed for this frame are (1) It is universal in its application. (2) Standard parts are available, which can be added or subtracted in much the same way as with Meccano. (3) All the parts are interchangeable. (4) Any position of limbs or body in extension or suspension can be obtained. (5) It is rigid, light, and strong. (6) It does not take up more floor space than the bed. (7) The whole bed and frame can be moved from place to place as a unit without disturbing the patient. (8) The method of fixation does not necessitate any mutilation of the bed. (9) It is easily and quickly attached to any standard iron bedstead. (10) If necessary, all four limbs can be treated at once. (11) It is cheap because all the materials used are ordinary commercial products, and there are no parts which have to be specially manufactured solely for use in the frame, and also because it will last practically indefinitely even in constant use, there being no joints or moving parts to get out of order, and no parts which will bend or break under the type of strain to which these instruments are subjected. (12) It can be made by any competent mechanic. (13) It looks neat and tidy in a ward or private room.

It will be seen in Fig 1 that in general principle the frame is a four poster superstructure of metal tubing in which holes have been drilled at regular intervals both in the upright and horizontal members. Crossbars, with holes drilled to correspond, are attached by bolts and wing nuts which are firmly secured by hand. These bars may be of any required length or number. Provision is made for increasing the length of the bed by the angle brackets shown at the foot. These are of standard size, can be fixed in any position or removed if not required. They also serve to protect an extra long splint from accidental knocks. A right angled bar, supported by a stay held by wing nuts, can be added at the head of the bed for support of an arm. This bar is reversible.

The frame is much higher than any previously designed and three factors were taken into consideration when deciding this point. (1) To provide for the patient a sense of space and freedom. When it is remembered that these patients will probably be lying in such a bed for months, a low close structure will tend to become oppressive and irksome. (2) To allow easy access for X ray apparatus. (3) To provide sufficient clearance for any wall fittings, such as lamp brackets, which might get damaged when the foot of the bed has to be raised on blocks.

FIG 1

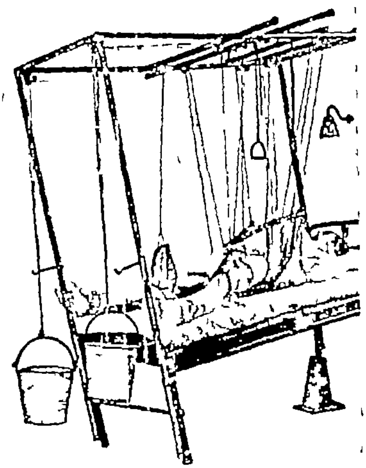


Materials used—Three quarter inch steam or gas barrel is used throughout, with an aluminium paint finish.

Two uprights for head, 7 ft long drilled ½ in holes, 3 in centres.

Two uprights for foot 7 ft 2¼ in long drilled ½ in holes (the difference in length is to allow for the castors at the

FIG 2



head; if four castors are fitted all four uprights will be the same length)

Two short crossbars ft 5½ in long drilled ½ in holes

Two long crossbars 6 ft 6 in long drilled ½ in holes.

Eight pairs of double pipe cleats two pairs for each upright Made from 1¼ in by 3/16 in. flat iron

Eight 1½ in by ½ in bolts with wing nuts; on to each cleat

Four ¾ in angle tees for the top of the frame

Two angle brackets shaped and drilled as in Fig 1 Made from 1¼ in by ¼ in. bar iron

Two bed pulls for patient with rubber shock absorbers and chain.

Two 2½ in. by ½ in. coach bolts with wing nuts for each extension bar (The heads of the bolts are closed round the tube on two sides to prevent turning)

Two rubber protectors to each extension bar (Ordinary rubber bed feet are used)

As many extension bars as required and of any length

Stock of 1¼ in galvanised iron rings

To assemble —A dozen rings are threaded on each short crossbar Uprights and short crossbars are screwed together for head and foot The uprights are then attached to the bed legs with cleats so that the bottom of the upright rests on the bulbous feet of the bed The crossbars from head to foot are now screwed into angle tees at the running thread and screwed back into opposite end They are then fixed with a locking nut The ends of all extension bars are plugged drilled and tapped ½ in Whitworth to take rubber protectors. The bed pulls are assembled by passing a 4 in by ½ in. hook bolt through a hole in a crossbar hook downwards threading on two washers and a 1½ in length of ¾ in Dexine rubber with ½ in bore and securing with a wing nut

From the above description it will be seen that for purposes of transport the frame is easily dismantled and can be packed into a very small bulk.

Fig 2 shows the frame being used to suspend a large man made much heavier by reason of a Whitman plaster It illustrates well the very heavy strains the frame is capable of bearing without the slightest fear of collapse Suspension of heavy patients in this way relieves the nursing staff of a great deal of heavy lifting and is much safer and more comfortable for the patient It is particularly useful for plaster bed cases where movement of the patient must be reduced to a minimum. This relief from heavy lifting will be most noticeably felt in smaller hospitals and nursing homes where there is less staff available perhaps

All the frames now in use have been made for me by the hospital engineer, and I am very grateful to him for the help and advice he has given. Those wishing to have frames made can obtain them from the Medical Supply Association Gray's Inn road, London W C

A CASE OF SPLENECTOMY FOR LYMPHADENOMA FOLLOWED BY MYELOID LEUKÆMIA

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THE following case is unusual enough to deserve record

Abbreviated history —In January 1930 a man aged 47 was admitted to the Victoria Hospital, Swindon with a history of severe dyspepsia for three years with one large hæmatemesis a year previously There was a tumour in the left hypochondrium which had been diagnosed as carcinoma of the stomach At laparotomy by Mr Rodney Maingot the mass was found to be an enlarged spleen adherent to the stomach and diaphragm It was removed and when cut into was found to be studded with large white masses The stomach showed no abnormality either on radiological examination or at operation Microscopically the spleen showed the appearances typical of lymphadenoma in an advanced stage

The patient made a satisfactory recovery from the operation and his gastric symptoms and returned to work. His blood picture showed no abnormality On July 7th 1935 he was readmitted on account of severe and continual bleeding from the gums the mouth was very septic from pyorrhœa and carious teeth There was no enlargement of any glands and nothing abnormal could be felt in the abdomen

A blood picture showed red cells 4 250 000 hæmoglobin 47 per cent and colour index 0·56 with slight anisocytosis and poikilocytosis The average size was diminished and a few macronormoblasts were present Only very few platelets could be seen in a 3 by 1 inch film White cells 68 000 (polymorphs 84 per cent large lymphocytes 2 per cent small lymphocytes 2 per cent hyalines and eosinophils 1 per cent each, with 5 per cent of myelocytes and 5 per cent of typical myeloblasts) A provisional diagnosis of septic infection with thrombopenia was made but on July 16th the total white cells had risen to 82,800 and thrombopenia was not present On July 23rd the red cell count had fallen to 3 600 000 and both normoblasts and macronormoblasts were present in large numbers The white cell count was 91 000 and the percentage of myelocytes had risen to 30 and of myeloblasts to 10 A diagnosis of myeloid leukæmia now seemed certain

The teeth were extracted piecemeal and the hæmorrhage was controlled

From that time onwards the blood was examined at fortnightly intervals The condition of the patient slowly improved and his mouth became less septic. The blood picture for the next six months fluctuated somewhat the white cells varying between 50 000 and 90 000 while the percentage of myeloid cells of all types kept at an average of 30 The red cell count remained round about 3 000 000 with numerous nucleated forms

By March 1936 all the teeth had been extracted oral sepsis was not clinically evident and hæmorrhage and oozing had ceased At this time the red cell count had risen to 5 000 000 and only a few normoblasts were present The white cells numbered 46 000 with 80 per cent of polynuclears and 10 per cent of myeloid cells

He was receiving 6 c cm of Campolon intramuscularly every week Calciferol, arsenic and iron were also given intermittently He was then dischargd with instructions to present himself frequently for examination, but he was careless about this until June 12th, 1936, when his red cells had fallen to 2,800,000 with 33 per cent Hb and very numerous normo and macronormo blasts were present Total leucocytes 122,800 with 15 per cent of myeloid cells He was readmitted but continued to go downhill

On April 27th, 1937 a blood count showed 2,675,000 red cells with marked irregularity of size and shape There were 1,000 000 normoblasts and 500 000 macronormoblasts per c mm, and the percentage of hæmoglobin was 22 White cells 167,000 with 40 per cent of polynuclears 15 per cent of myeloblasts, and 35 per cent of myelocytes of various types

The patient became gradually comatose and died on May 13th and a post-mortem examination was made 12 hours after death I received the humerus intact, and portions of the liver and kidneys The liver was stated to be small and pale There was no trace of a spleniculus the splenic fossa being represented by a mass of adhesions No enlarged glands were seen anywhere, and there were no deposits in the mediastinum No hæmorrhages No specific lesions in heart or brain One infarct in right lung

In the humerus the marrow was hyperplastic and pale red in colour throughout The compact bone was reduced to a thin shell Smears and sections showed a great preponderance of the primitive stem cell—lymphoidocyte—with only a few myelocytes and myeloblasts Normoblasts and macronormoblasts were present in moderate numbers, only a very few polynuclears and erythrocytes

The liver showed extreme fatty degeneration and necrosis of the hepatic cells, only small islets of normal liver cells were present and there was no attempt at regeneration The whole of the section was infiltrated diffusely with myelocytes and myeloblasts, owing to the paucity of recognisable hepatic cells it was impossible to determine whether this infiltration was originally interlobular or intracellular The kidneys showed advanced parenchymatous and interstitial inflammation with a diffuse infiltration of myelocytes and myeloblasts

This case presents several features of interest Taking them in chronological order we have a long history of symptoms simulating gastric ulcer—i.e, pain, vomiting, and hæmatemesis, associated with enlargement of the spleen, adherent to the stomach—which were cured by splenectomy, there being no evidence of any abnormality of the interior of the stomach itself

Then we have the somewhat uncommon distribution of the lymphadenoma—i e, confined to the spleen Neither at the time of the splenectomy nor post mortem was there any evidence of involvement of any other glands That being so, it is evident that a cure was effected by splenectomy

It is not suggested that the previous lymphadenoma had any causal connexion with the subsequent leukæmia The fact that both are diseases of the reticulo endothelial system does not take us very far in this respect As regards the leukæmia, the occurrence of oral sepsis and hæmorrhage is not uncommon, but they afford no support for the view—now practically abandoned—that sepsis is the cause of leukæmia The association is more probably due to the fact, as shown by experimental evidence that leukæmic blood is deficient in both phagocytic and bacteriolytic powers

There seems to be no theoretical reason why myeloid leukæmia should not develop in the absence of a spleen, but the occurrence must be very rare, and I have failed to find records of a similar case The duration and course of the leukæmia were not unusual in a case where radiotherapy is not employed In this instance it was unfortunately not available at the hospital, and the patient was too ill for transportation

I am indebted to my colleagues, Dr J Lowe for notes on the clinical aspect of the case and the post mortem examination, and Mr Rodney Maingot for an account of his splenectomy

MEDICAL SOCIETIES

EDINBURGH OBSTETRICAL SOCIETY

At a meeting of this society on June 9th, with Mr Douglas Miller, the president, in the chair, a paper on the

Modification of Cow's Milk for Infant Feeding

was read by Dr H L Wallace The new born infant he said, was liable to be neglected by the medical attendant and relegated to the care of the nurse who was given the responsibility of deciding how it was to be fed. With breast feeding this arrangement was usually quite satisfactory, but with artificial feeding the infant became a medical problem demanding the attention of all concerned in its welfare Opinion still differed about the best way of presenting cow's milk as a substitute for human milk, and experiments had recently been carried out at the Edinburgh Royal Hospital for Sick Children to determine the relative merits of various modifying processes in common use The tests were designed to show the effect of these processes on the clotting of milk by rennin It was found that such simple procedures as dilution with water and boiling reduced both the size and toughness of the milk curd and the addition of sodium citrate had very little advantage over dilution and boiling Acidification of milk by the addition of lactic acid abolished large clots and produced a fine granular precipitate The addition of partially dextrinised starchy foods to milk did not affect the size and consistency of the clots, since on the addition of rennin these were found to be large and tenacious closely resembling those of raw milk. If fresh cow's milk was to be used for infant feeding it should be diluted with water boiled, and have added to it sugar and cream in requisite amounts the addition of starch was undesirable, citrating and acidifying were unnecessary for normal infants Two varieties of dried cow's milk were selected for comparison with fresh milk. In one case drying had been carried out by the roller process and in the other by the spray process When rennin was added to milk dried by the roller process a fine precipitate was formed but no true clotting took place, whereas in milk dried by the spray process clotting did occur but the individual curds were comparatively small and soft After gentle shaking to simulate peristaltic action both varieties of dried milk bore a striking resemblance to human milk.

Taking everything into consideration, Dr Wallace thought that the best available substitute for human milk was a good variety of dried milk. Such milk was safe in that it was free from tubercle bacilli and pathogenic organisms, its vitamin and iron content was adequate, it was quickly and easily prepared and thereby error was reduced to a minimum, and it had been made to resemble human milk to an extent that could never be achieved in

(Continued at foot of next page)

REVIEWS AND NOTICES OF BOOKS

A Social Problem Group?

Edited by C P BLACKER M.D F R C.P General Secretary of The Eugenics Society London: Humphrey Milford Oxford University Press 1937 Pp 228 15s

THE idea of the existence of a group in a community in which all the evils are concentrated has formed the background of much sociological thought both in England and in America. The Wood report, published in 1920 laid stress on this conception which was crystallised by definition of the group as approximately the lowest 10 per cent of the social scale in most communities. This lowest 10 per cent is recognised by certain characteristics of its members who are said to be subnormal in intelligence, particularly liable to be insane epileptic or criminal and usually paupers or unemployed. In a recently published series of essays ("A Social Problem Group?") each specified social evil has been examined with a view to ascertaining how far its occurrence is associated with the other defects which are thought to be significant. There are chapters on mental retardation mental disorder inebriety prostitution, recidivism poverty and unemployment. Some of the writers give information about the relation of the specific evil to the mental ability of the subjects. Dr Tylor Fox for example calls attention to the strong association between mental defect and epilepsy of early onset. Other writers like Mrs S N Rolfe, demonstrate a connexion between sexual promiscuity and psychopathy. A well documented account of recidivism and the social problem group by Dr W H de B Hubert, leaves the impression that the prospect of understanding the relation between repeated criminal offences and the individual's constitutional and environmental background is remote: it will be necessary to direct future research towards particular types of crime rather than to treat the group as a whole. Some of the essays suffer from having been based on specially selected data. Miss J Galloway's detailed inquiry into the subsequent histories of neurasthenic paupers refers only to a highly selected group of cases, and it is hard to see what general conclusions can be derived from such information for instance as that a certain home is "comfortable although bedroom crowded with beds" and the Relieving Officer reports of greyhounds being bred there. The social investigator is likely to consider home conditions unsatisfactory where vice is prevalent and such observations are likely to lead to circular arguments. Dr A A E Newth for example selects certain mentally defective children to be called subcultural because their families contain illiterate or defective members; thus his conclusion that subcultural families are of low social standing seems to be tautologous.

(Continued from previous page)

the average home. Dried milk however was apt to be expensive and was therefore often beyond the reach of the very homes where its use would be invaluable—namely those of the harassed overworked mothers who had neither the time nor the facilities to make cow's milk safe and digestible for their babies. In conclusion Dr Wallace pointed out that the perfect substitute for mother's milk did not exist and that breast feeding should still be the aim in all cases.

The Eugenics Society deserve praise for having taken a practical line in the study of the so called social problem group. It is clear however from the doubt expressed in the title of the book as well as from the contributions of Dr Caradog Jones and the editor that the result of the investigation is mainly to draw attention to our ignorance of the real causes of social problems. The term "social problem group" is liable to be used to obscure the real complexity of the situation. To discover that mental inferiority can lead to unemployment and poverty, or to find evils like inebriety and mental instability associated is to emphasise common knowledge. Real advances in sociology can only be made by detailed examination of environmental and genetic effects in carefully restricted fields.

Recent Advances in Endocrinology

Third edition. By A T CAMERON M.A. D Sc F I C F R S C Professor of Biochemistry Faculty of Medicine University of Manitoba Biochemist Winnipeg General Hospital. London: J and A Churchill. Pp 458 15s

Endocrinology in Modern Practice

By WILLIAM WOLF M.D M S Ph.D London W B Saunders Company Pp 1018 42s

Endocrinology Clinical Application and *Treatment*

By AUGUST A. WERNER M D F.A C.P Assistant Professor of Internal Medicine St Louis University School of Medicine London: Henry Kimpton 1937 Pp 672 40s

ENDOCRINOLOGY is the most recent of clinical sciences. In America its status appears to be more generally recognised than in this country; numerous clinics there deal solely with endocrine problems. This may account to some extent for the number of text-books on the subject lately published by American authors. Apart from Rolleston's historical review no recent book on clinical endocrinology has appeared from the pen of an author working in this country. Perhaps this is because here a text-book is expected to contain a series of dogmatic statements which may be committed to memory or a notebook and quoted at some future date without fear of contradiction. In the present state of endocrinology this is impossible and it may be for this reason that no English writer has yet tried to compose a text book on the subject.

Cameron's Recent Advances is no stranger. The first edition appeared in 1933 and was immediately accepted as an authoritative review. Since the chief essential for the understanding of endocrinology is a knowledge of biochemistry—the hormones being chemical substances whose actions are achieved by a series of chemical processes—it is fitting that the scientific aspects of endocrinology should be surveyed by a biochemist. The third edition preserves the original arrangement, the pituitary being dealt with at the end of the book though it is now recognised as being the most important of the endocrine glands. In the section on the thyroid an account is given of Mansfeld's work which suggests that thyroxine passes by way of the nerve fibrils to the interior of the tissue cells, reaching the zone of least aerobic oxidation where its action is most effective. In the section on the pancreatic islands the introduction of protamine insulinate by Hagedorn is duly recorded and the sodium treatment of Addison's disease is mentioned in the chapter on the adrenals Though little is yet known of the thymus and pineal, Rowntree's work on the effect of thymectomy and pinealectomy on successive generations of animals is summarised. The chapter on the gonads has been largely rewritten and brought up to date, and in the section on the pituitary the more recently studied principles such as prolactin and the ketogenic factor have received full recognition. The book undoubtedly represents one of the best expositions of the subject at present available

Wolf's work seems to us too long The attempt made to deal in detail with the physiology of the subject before discussing the clinical aspects is not altogether successful It contains a number of loose statements For example, on page 142 œstrin is described as being inert when administered orally, whereas on page 154 it is stated that "œstrin given by mouth is active" Anterior pituitary preparations are described as being given in doses of 1000 to 2000 *international* units, whereas no international standard has yet been devised for these preparations Unfortunately there are so many slips of this kind as to detract seriously from the value of the book. The second part of the book which deals with the endocrine aspects of "non endocrine" diseases is more extensive than present knowledge of the subject would warrant, and shows a lack of cautious discrimination which is unfortunate at the present time when there is danger of over enthusiasm bringing the whole subject into disrepute A number of useful facts are included in the book of which probably the most helpful is a series of illustrations showing the ages of appearance and closure of the epiphyses The book should prove of interest to the endocrinologist, but cannot be recommended as an introduction to the subject for a novice

Werner's book is very interesting It deals particularly with the physical characteristics of endocrine disorders and contains a large number of photographs of patients illustrating the bodily changes induced by such disorders These photographs are well chosen and add considerably to the value of the book Perhaps too much space is occupied by detailed case histories and too much emphasis laid on minor points such as the configuration of the hands in endocrine diseases Unfortunately careless proof reading mars the reader's enjoyment Many useful facts, for instance, a table of normal measurements in relation to age, are presented, and the inclusion of such material adds to the value of the book as a work of reference

Vade Mecum of Medical Treatment

By W GORDON SEARS, M D Lond , M R C P Lond , Deputy Medical Superintendent, St Charles' Hospital London Edward Arnold and Co 1937 Pp 355 10*s* 6*d*

THIS book takes diseases in alphabetical order and confines discussion to treatment, although occasional reference is made to points of differential diagnosis In a few places diseases of one organ—e g , heart, ear, or eye—are grouped together, but confusion is avoided by an index at the end of the book This index would be improved by references to treatment of such symptoms as pain, fever, and cough which are in fact dealt with quite fully in the text Under the individual headings brevity is achieved by excluding methods of doubtful value, and the accounts are excellent summaries of accepted modern procedure in this country Where treatment which the general practitioner can hardly be expected to perform is included this has been done intentionally so as to indicate the measures for which hospital facilities or a specialist's assistance are necessary Proprietary preparations are included only where no equally effective official drug or mixture of drugs is known. The prescriptions given are with a few exceptions models of rational therapy An appendix contains a table of doses and such useful facts as the normal figures for the constituents of blood and the changes in the cerebro spinal fluid in disease This is a book which can be thoroughly recommended to the general practitioner or to the hospital resident medical officer who requires accurate information at short notice

Tweedy's Practical Obstetrics

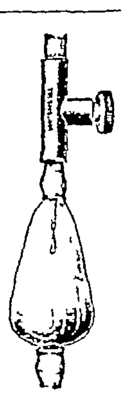
Seventh edition Revised and largely rewritten by BETHEL SOLOMONS, M.D , F R C P I , F C O G , M R I A , F A C S (Hon), Consulting Gynæcologist and late Master, Rotunda Hospital, Dublin , and NINIAN MCINTIRE FALKINER, M D , Sc D , F R C P I , F C O G Visiting Gynæcologist, Royal City of Dublin Hospital London Humphrey Milford, Oxford University Press 1937 Pp 773 25*s*

THIS book, a well established favourite, maintains its tradition as the mouthpiece of Rotunda methods Dr Bethel Solomons has again undertaken its editing, this time assisted by Dr Falkiner New chapters have been contributed by different experts on X rays in obstetrics, infant hygiene, ophthalmia, and the development of the ovum, specially written by individual authors

Useful statistical tables are introduced, based on the wealth of clinical material to be found at the Rotunda The text bears evidence of careful revision and the authors are to be congratulated on this as well as on the precision with which they outline the changes of their own views Surely, however, a picture of Frommer's dilator has no place in a modern textbook, even when as here an apology is offered for its insertion. Perhaps examiners in Ireland are too historically minded There is also some evidence of joint authorship without full collaboration—e g , in the section on the Cæsarean operation the lower segment method is given preference in placenta prævia, whereas in the text dealing with the latter it is stated that the lower segment operation has now been abandoned owing to its additional difficulties in prævia cases There is every reason to expect that this classic will retain its popularity

NEW INVENTIONS

INTERCEPTOR AND REGULATOR FOR CONTINUOUS INTRAVENOUS SALINE



THE piece of apparatus illustrated will be found useful for administering continuous intravenous saline The rate of flow can be regulated with great precision The large glass bulb obviates the drip becoming obscured by an accumulation of solution—a constant source of trouble in other patterns of interceptors

HAMILTON BAILEY, M S. Lond ,
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London

THE LANCET

LONDON SATURDAY JULY 3 1937

ARE VIRUSES ALIVE?

When W M **Stanley** announced two years ago that he had isolated from Turkish tobacco plants infected with mosaic disease a crystalline protein having the characters of the virus the majority of virus workers received the news with a certain scepticism Their doubt did not concern the facts but their interpretation, for it seemed possible that the virulence of this crystalline preparation was due not to the protein but to mosaic virus present as an impurity **Stanley** himself who all along has shown commendable caution in interpreting his findings clearly envisaged this possibility Since then events have moved rapidly His observations have been repeated and confirmed in this country **Bawden** and his collaborators[1] at Cambridge having isolated an identical protein from diseased Burley tobacco plants **Stanley**[2] has further obtained the same high molecular weight protein from spinach and phlox plants infected with tobacco mosaic virus and **Beale**[3] has had similar success with petunia plants In every case the crystalline protein was highly virulent.

The fact that the same peculiar crystallisable protein has been obtained from such divergent species of plants as phlox and tobacco and that a solution of this protein has always proved virulent in high dilution is strong evidence in favour of **Stanley**'s view that this protein is the virus But there is more Tobacco mosaic virus has a number of variants each of which produces symptoms differing from those that characterise infection with the parent strain and from Turkish tobacco plants infected with three of these variants—the yellow the masked or symptomless and the single lesion mosaics—**Stanley**,[4] and **Loring**[5] have obtained heavy proteins which though obviously related to **Stanley**'s original preparation have characteristics both physical and chemical that distinguish them from it and from one another Thus when mosaic virus mutates the change is associated with a change in the protein which the variant produces in the plant that it infects And when one adds that **Stanley** has been unable to separate the heavy protein from a hypothetical virus impurity and that he has also shown that change produced in the protein is associated with a corresponding change in virus activity, it is not easy to object to his conclusion that this high molecular protein is the virus A further advance comes from the work of **Bernal** and **Fankuchen**[6] who have been investigating at Cambridge the structure of these crystalline proteins by means of X ray photography and optical methods They confirm their previous opinion that **Stanley**'s crystals are of a liquid crystal nature they find that though the crystals of different mosaic viruses show the same intramolecular pattern there are significant differences in intermolecular pattern and they suggest the possibility of classifying these viruses on the basis of X ray pattern

It is difficult then to escape the conclusion that these heavy proteins are *the virus* But since they can be obtained in a crystalline form without loss of activity they appear to belong to the non living world How are we to reconcile this with the ability of viruses to multiply and to cause contagious diseases that spread like diseases due to living micro-organisms and their ability to give rise to variants? But can there really be any sharp dividing line between the living and the non living? As one passes downwards in the scale of living things a point must be reached at which it is extremely hard to say whether one is dealing with the animate or inanimate and it is possible that in the no-man's land between the two worlds agents will be found like these viruses which partake of the characters of both As **Stanley** says the enormous size of the molecules of these virus proteins may allow of sufficient complexity of structure for them to behave in some respects like living organised beings How many viruses will prove eventually to be of the same nature as these plant viruses it is impossible to predict but already evidence is adduced that one at least of the animal viruses—that of the Shope rabbit papilloma —is a heavy protein It seems fairly safe to assume on the other hand, that the large animal viruses like the virus of psittacosis and the viruses of the pock diseases, are more highly organised agents belonging more definitely to the living world

DENTAL TREATMENT IN LONDON

A handbook[7] recently issued by the London Council of Social Service describing the facilities for dental treatment in the L C C area is a useful contribution to an important aspect of public health The information was collected by the students of the social science department of Bedford College working under the direction of Mr **Henry Mess** and has been collated and checked by Miss **Anne Topley** The survey suggests that though the network exists for a scheme of dental treatment from early childhood to adult life it is still too fragmentary and incomplete to have its full value as a means of combating dental disease Thus there is provision for dental treatment for children of pre school age in most boroughs, but little use is made of the clinics by children older than 18 months There is no legal obligation on the boroughs to provide such clinics, and the organisation and extent of the service varies considerably In 8 boroughs there are still no maternity or child welfare clinics

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[1] Bawden F C Pirie N W Bernal J D and Fankuchen I Nature 1936 138 1051

[2] Stanley W M Amer J Bot 1937 24 60

[3] Beale H P (cited by Stanley) Ibid 1937, 24 60

[4] Stanley, W M J biol Chem 1937, 117 325.

[5] Loring H S and Stanley W M Ibid p 733

[6] Bernal J D., and Fankuchen I., Nature May 29th 1937 p 923

[7] Provision for the Dental Needs of the Working Classes in the London County Council Area Obtainable from the London Council of Social Service 7 Bayley-street W C 1 1937 1 p 22 4d.

While then there is welcome evidence of increasing recognition of the importance of dental treatment for the pre school child, it is clear that so far as London is concerned—and the same holds good for the rest of the country—facilities are still inadequate The figures provided by school dentists are instructive The percentage of children who require dental treatment on entering the elementary schools is well over 20, and the school dentist, who is already responsible for the dental condition of a much larger number of children than can be cared for properly, starts his work with a handicap of existing dental disease so great that he can hardly hope to catch up and in fact never does The estimate in this report is that in London only 48 5 per cent of the children requiring dental treatment receive it The child attending the secondary school is apparently less fortunate as regards opportunities for dental treatment than the elementary school child, since though certain facilities are provided in secondary schools they are much less complete It is a reflection on our social order not without irony that a child intelligent enough to pass from an elementary school to a secondary school, and thus take the first step of a path which may lead to the university, should by so doing diminish his chances of receiving regular dental supervision and treatment Should he be fortunate enough to be properly cared for in this respect till he leaves school, he will find yet another gap in the chain of dental treatment, for no worker is eligible for dental benefit under the N H I scheme until he reaches the age of 19 Thereafter, since dental benefit is additional and not statutory, his opportunities vary according to the particular approved society of which he is a member, or to the facilities for treatment provided by public authorities or voluntary organisations in his district Most of the voluntary hospitals have a dental department, though in some of them little more is done than extraction of teeth, at the other end of the scale are the hospitals to which dental schools are attached and these offer a complete range of service Thus by hook or by crook the insured person gets the dental care to which he should be entitled The almoners of all our hospitals are familiar with ways in which help can be provided for the necessitous poor, a convenient list of some typical voluntary agencies is here supplied, divided into (*a*) insurance societies and contributory schemes, and (*b*) societies to which appeal can be made on behalf of suitable applicants The report, which is well arranged and edited, leaves no room for doubt that though dental inspection with treatment is a universal need, large sections of the working class population have no effective help in obtaining it

TULARÆMIA

Most of us tacitly approve of the slightly censorious attitude of the medical writer of the Acts of the Apostles towards those who "spend their time in nothing else but either to tell or to hear some new thing" But preventive medicine forces its practitioners to copy these frivolous Athenians, since new diseases are rarely discovered until they are looked for, so that "telling and hearing some new thing" becomes an essential part of it

Not that tularæmia is a "new thing" It is now 26 years since *Bacterium* (or *Pasteurella*) *tularense* was isolated by McCoy and Chapin, and 17 years since tularæmia was fully studied by Edward Francis, it is nearly as long since the noxa was banished from our national collection of type-cultures because it was the only one which could not safely be handled by the curator But what is new is the identification of tularæmia in countries in which it was previously unknown, making the chances of its arrival in these islands increasingly substantial Just as in North America it has spread from the western and southern States to all except a few on the north eastern sea-board—an epidemic from the sale of infected rabbits occurred in New York City last winter—so in the Old World it has been identified in Japan (1924), Russia (1928), Norway (1929), Sweden (1931), and now in Austria,[1] Turkey,[2] and Czechoslovakia, and there have been accounts of its occurrence also in Italy, Hungary, and Rumania An important and well documented account of the epidemic in Czechoslovakia[3] dealt with some 400 cases, of which nine tenths were attributable to direct contact with infected hares Now, for the first time—if we exclude the infections of laboratory workers at the Lister Institute already hinted at—a suggestion has been made that tularæmia may have appeared in the British Isles Dr A P Thomson and his colleagues, in a paper published on page 9, describe three associated cases of a low, wasting fever, in one of which the histological appearances of the liver lesions resembled those of tularæmia. Fortunately it seems very unlikely, on the whole, that these were really cases of tularæmia, since the diagnosis rests primarily on a specific agglutination reaction which is strong and persistent, and this was negative in all three patients Other important diagnostic features were also absent, such as a primary ulcer, conjunctivitis, enlargement of the glands, a short incubation period (1–10 days, average 3), and a very long convalescence, nor was there a history of contact with diseased rabbits or other rodents, although there was said to have been unusual mortality among the cats in the district in south western Ireland, where infection was presumed to have taken place. Moreover, the most striking characteristic common to the three illnesses—viz, eosinophilia—is *not* found in tularæmia Yet it is hard to make an alternative diagnosis and the cases form an interesting little series about which to speculate.

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[1] David H *Wien klin Wschr* April 5th, 1937 p 459

[2] Arar A, Communication to the Committee of the Office international d Hygiène publique May 1937

[3] Prochazka L Communication to the Committee of the Office, May 1937

Meanwhile the possibility of tularæmia reaching the British Isles remains. Of the various proved animal vectors, hares, rabbits and water voles are the commonest in this country, although many other animals and birds have proved susceptible to experimental infection. Since thorough cooking or freezing apparently renders the flesh of infected rabbits innocuous[4] and since tame or hutch rabbits are rarely if ever infected,[4] it seems unlikely, though not impossible, that rabbits imported from abroad for food or breeding purposes would introduce the infection. However, a glandular fever that cannot be diagnosed with certainty, especially if it is associated with an ulcer or a conjunctivitis or occurs in somebody whose occupation brings him into contact with ground game—e.g., game-keepers, butchers, railway employees and cooks—should arouse suspicion. An unusual mortality among rodents such as hares, rabbits, squirrels or voles is also worth noting. The agglutination test is at present the decisive diagnostic procedure, but as with other rare or new diseases what is most important in practice is to keep the possibility of tularæmia in mind.

UPSHOT OF THE MACLEAN LITIGATION

CERTAIN aspects of the issues in the case of Macleans Ltd *v.* Lightbown were summarised in Medicine and the Law[5] under the heading "Maclean's Stomach Powder." The issues were not of direct interest to the medical profession. Macleans Ltd., having acquired a right to the trade mark "Macs," under which the company sold throat lozenges, successfully applied to the courts for an injunction to prevent Lightbown Ltd. from selling medicated sweets under the name "Merrimacs." The defendant company had advertised its sweets as "the famous Maclean sweets" and as "containing the genuine Dr. MacLean's stomach powder." Mr. Justice FARWELL thought that Lightbown Ltd. had been deliberately trying to steal the plaintiff company's reputation for its sweets. The interest of medical practitioners in the sale of these medicated sweetmeats is negligible. What doctors are, however, likely to be curious about is the side-issue of the stomach powder. Some of them probably wonder how far a commercial firm is protected by law when it exploits a prescription which a medical practitioner has offered gratis to the world. The word "exploit" is used in no offensive sense. Professional tradition prevents the doctor from making a commercial profit from any discovery which he believes to be of benefit to mankind. But commercial enterprise is needed to make the discovery available to the public, and commercial undertakings are naturally conducted on profit-making rather than exclusively altruistic lines. "Dr. MacLean," said Mr. Justice Farwell, "as all doctors generously do, gave the benefit of his researches and inquiries in respect of this medicine to the public; it was published in various medical and other journals and the right to use his prescriptions was not confined to any one person, either the plaintiff company (Macleans Ltd.) or any other person." The term "MacLean's powder," "MacLean's alkaline powder" or "MacLean's stomach powder" became well known among doctors and chemists; it was prescribed as such and customers might ask for it as such in drug stores. Various chemists made up the powder from Dr. MacLean's prescription for convenient retailing as required. This being the position before 1931, Macleans Ltd. began in that year to market a stomach powder made from one of the three formulæ published by Dr. MacLean. They advertised it largely so that it became even more widely known to the public. "That, of course," observed Farwell J., "did not prevent Professor MacLean's powder being still known as 'MacLean's powder' and rightly described as 'MacLean's powder.'

> The plaintiff company cannot claim any monopoly in the powder which they themselves make up from one of Dr. MacLean's formulæ and they are not of course entitled to claim that the powder which they put on the market is from their own prescription or their own secret in any sense; but in my judgment, although other persons are entitled to describe their powders as made from one of the three formulæ of the Professor as 'MacLean's powder,' the plaintiffs (Macleans Ltd.) are entitled to have it made clear that the powder which is being offered to the public under the name 'MacLean's powder' or 'Prof. MacLean's powder' is the powder which is made up from a prescription of Professor MacLean and is not powder which is made up by the plaintiff company."

On this part of the case, then, the result of the judgment is that any chemist or manufacturer can make up and advertise for sale a powder described to be made according to Prof. MacLean's prescription. But, inasmuch as Macleans Ltd. have built up a business in, and have spent money in advertising, goods of this kind under their own name, which happens to be almost indistinguishable from that of Prof. MacLean, no competitors will be allowed to sell goods as containing Prof. MacLean's stomach powder unless they also take pains to distinguish their goods from the goods of Macleans Ltd. An honest trader, in Mr. Justice Farwell's words, is entitled to call his powder "Dr. MacLean's powder," but if he is an honest trader he must use those words in such a way that no reasonable person could suppose that he intends to tell the public that the goods he offers for sale are goods emanating from the works of Macleans Ltd. As was explained in the former summary of this litigation, the judge refused to grant an injunction to restrain the use of the words "containing the genuine Dr. MacLean's stomach powder." "I can see," he said, "no difficulty in the defendant company advertising and putting on the market for sale these sweets under another name having on the packet a statement that they do contain the genuine Dr. MacLean's stomach powder, but used in such a way as to make it perfectly plain from what firm the goods come and thus to indicate that they are not the plaintiff's goods," If that were done, there would be no occasion to restrain them from using the words

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[4] *Publ. Hlth Rep., Wash.* 1927, 42, 391.
[5] *Lancet*, June 12th, p. 1423.

The upshot of the case, therefore, is that Macleans Ltd obtain no monopoly in the MacLean stomach powder they did not claim it What they claimed was that, if other persons wanted to use the name MACLEAN (when printed in capitals the distinction between the big and little "l" disappears) in order to indicate that the powders sold by them were manufactured from the formulæ of Dr Hugh MacLean, such persons should make it perfectly clear that the name MACLEAN was used not for the purpose of indicating that the powder originated from Macleans Ltd but for the purpose of indicating that it was in accordance with one of Dr MacLean's formulæ This claim the plaintiff company seems to have established The fact that the surname of the founder of the company was almost indistinguishable from that of Dr MacLean is a fact which may or may not have been commercially profitable but at any rate it involves no illegality Dr MacLean himself, who must be thoroughly tired of having his name dragged into litigation of this sort, is not legally entitled to prevent a firm of manufacturing chemists using a similar name which happens to be the name of the founder of the firm But when in accordance with professional ethics a registered medical practitioner refrains from profiteering in the fruits of his researches, he deserves the sympathy of his colleagues if a confusion of similar surnames should leave any chance of his being thought by the uninstructed to be doing just what he certainly has not done And this perhaps is the last of the litigation on this subject unless some new member of the clan Maclean, MacLean, or M'Lean arises to compete in the field of chemical manufacture

ANNOTATIONS

CHILDREN AT PENDLEBURY

MANCHESTER showed its sunny side for the visit of the children's section of the Royal Society of Medicine on June 20th and the tour of the children's hospital at Pendlebury was a bright affair This hospital, according to its annual report (1936) is the oldest voluntary hospital for children in the country, but he was a wise person who designed that it should be placed in an open area in the northern outskirts of the city Florence Nightingale in May, 1879, said "The glimpses that I have had of the plans of your hospital lead me to think that it must be one of the best constructed in Europe" To day the old hospital is still in an airy and well lit place, and its 190 beds are amply spaced At Pendlebury one can see the old and the new On the south side Zachary Merton house is now in use for children in the convalescent period This house is an excellent single story building to accommodate 40 children The idea of supervising convalescents in the same grounds as the main hospital is helpful and it must be good for the children who are sufficiently recovered to have more freedom than would be possible in the ordinary wards Those who contemplate a similar extension of their hospital should pay a visit to this home Its position and construction are admirable and its colour scheme—an important medical domestic point—is attractive The shaded greens on the walls tone with the open lawns and neighbouring trees, and with the children's green frocks Dr Lapage and his colleagues may well be satisfied with their new unit It is now recognised that all general hospitals for children require an isolation block and Pendlebury will shortly have such a unit of 12 beds This consists of a series of single rooms separated by plate glass partitions, enabling direct observation of all the children from the sister's room The construction of this block is similar to one at the Birmingham children's hospital which ensures the continuation of general medical and surgical treatment of children who develop infectious disease in hospital The visit of the section extended to the Duchess of York's Hospital for Babies Dr Chisholm related the story of its evolution as a children's hospital wherein women graduates could obtain resident appointments, and in fact it is only of recent date that a man has joined the staff The hospital has 90 beds and is the scene of much interesting work in relation to the care and treatment of premature babies Dr Chisholm has elaborated a scheme for nursing mothers, and those who would know something of the practical management, values, and difficulties of such a scheme should consult her At each hospital there was a display of clinical cases for the benefit of the visitors

THERAPEUTIC HYPOTHYROIDISM

ENTHUSIASM for total thyroidectomy in the treatment of intractable heart disease is waning in America, where the method originated. The operation is being performed less frequently, and papers about it are more critical Two that have appeared this year summarise the results in several hundred cases operated on since 1933, and observed over periods long enough to show the late results Parsons and Purks[1] analyse particulars of 362 cases obtained not only from published reports but also through a questionnaire addressed to a large number of surgeons and clinics In the cases of congestive failure, numbering 229, they find an operative mortality of 10 5 per cent, among the survivors the result was considered excellent or moderately good in 63 per cent, but there was only slight improvement in 3 per cent and none in 34 per cent In the group with angina, totalling 133, the operative mortality was only 3 7 per cent, and the results were classed as excellent or moderately good in 84 per cent In another paper Claiborne and Hurxthal[2] discuss the results in 27 cases treated in the Lahey clinic, and these are seen to correspond fairly closely with those collected by Parsons and Purks, except that Claiborne and Hurxthal found improvement in a smaller proportion of those with congestive failure They believe that in the latter the improvement is often merely subjective and that the care with which patients follow advice after having undergone the discomforts and expense of an operation also contributes to success

The figures contained in these reports suggest at first sight that thyroidectomy is well worth doing, but this conclusion has to be accepted with reserve

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[1] Parsons W H and Purks W K *Ann Surg* May 1937, p 722

[2] Claiborne T S and Hurxthal L M *New Engl J Med* March 11th 1937 p 411

In the first place though the operation seemed to be fairly well borne by patients with angina this cannot be said of patients with congestion who showed an immediate mortality of over 10 per cent. Secondly it must be remembered that the figures given cover a limited period and that a result properly considered excellent for a few months will often have to be reclassified as fair or poor at a later date The net advantage becomes doubtful if after a short period of relief the symptoms return with their former intensity and the patient lives only another year or two Finally to get the maximum benefit from the procedure and at the same time avoid the more annoying *symptoms of myxœdema* the metabolism should be kept at about minus 25 per cent an adjustment that requires close observation and is not always practicable. At present the position seems to be that very few patients are really suitable for this form of treatment—far fewer than was at first believed—and that the majority are subjects with angina In these and in an even smaller number with congestion the severity of the symptoms may justify a serious operation which is only palliative

MEDICAL PRACTICE IN THE UNITED STATES

The Russell Sage Foundation is issuing a series of books describing "the present status of certain established or emerging professions in the United States The latest volume[1] deals with (1) medical education; (2) the organisation of the American medical profession and the number distribution and economic position of American doctors and (3) the recent development of industrial medicine group practice, and various forms of voluntary health insurance Though limited to American experience the book will interest medical practitioners in other countries The earlier chapters establish that even towards the end of the nineteenth century the American standards of medical education and of qualification for medical practice were incredibly low When Charles Eliot, after his appointment as president of Harvard in 1869 suggested certain changes in the medical curriculum it was thought that he would wreck the medical school. He actually proposed, said the head of the school to have written examinations for the M.D degree. I had to tell him that he knew nothing of the quality of Harvard medical students More than half of them can barely write Of course they can t pass written examinations. From this medical anarchy the United States was rescued mainly by the American Medical Association which after its reorganisation in 1901 became a national influence and later it had effective allies in the Association of American Medical Colleges and the American College of Surgeons. In describing the present conditions of medical practice in the United States emphasis is laid on the high proportion of practice expenses to gross income the rapid growth of specialised practice, the disparity between the incomes of specialists and general practitioners the difficulties and relative poverty of rural doctors and the increasing concentration of all forms of practice in the larger towns The question is how can medical care be made more generally available. The economic depression has intensified the public demand for social security which now finds expression in various forms of voluntary health insurance and in a growing movement towards compulsory health insurance The latest development is however, a movement that regards compulsory health insurance as merely a form of State endowment of private practice and urges that the State should provide medical care as it now provides elementary education This movement has adherents in the medical profession and it may be that the American Medical Association in resisting compulsory health insurance, has tended to deprive the profession of what in Europe has proved a bulwark against the real socialisation of medicine.

DISTRICT NURSING

Fifty years ago Queen Victoria founded the institute of district nursing which bears her name with £70 000 of the jubilee gift of the women of England to her Queen Alexandra succeeded Queen Victoria as patron and on her death a further £233 000 was subscribed to the institute in her memory Queen Mary the present patron received 2300 Queen s nurses at Buckingham Palace on June 16th to celebrate the jubilee of the founding of the institute District nursing which means nursing the sick in their own homes is as important to the community as are hospitals but it is not nearly so well known—it has in fact been called the silent service.' The Queen s Institute of District Nursing trains nurses who have finished their hospital training for the special work of district nursing and by inspectors covering the whole of Great Britain and Ireland sees that the work is kept up to a high standard. It works through the various district nursing associations in towns and counties. At present there are over 7000 district nurses in one year they paid fifteen million visits and attended 70 000 women in childbirth The institute is commemorating its jubilee by making the work of the Queen s nurses more widely known and thus inducing people to subscribe to their local associations it is also raising money to enable it to train more district nurses The medical profession will certainly use its influence in so worthy a cause

LEUKÆMIC TUMOURS

The apparent relationship of the leukæmias to neoplastic processes is emphasised by those occasional cases that present leukæmic infiltration of the tissues without any gross blood changes In one such case described by Dr Haram in our columns on May 29th[1] a woman of 30 had a sarcoma like tumour removed from her left breast and six months later another similar one removed from her right breast At the time of the first operation her blood showed no gross abnormality but after the second her leucocyte count showed 99 5 per cent. of lymphocytes marking the case as one of lymphatic leukæmia Post mortem extremely little lymphoid tissue could be found in the body so that the pathological process until near the end must have been almost wholly confined to the tumour like formations in the breast It is of course well known that in leukæmia especially of the acute lymphatic type there may be a comparatively low leucocyte count, but these cases of so-called aleukæmic leukæmia or pseudo leukæmia which develop local destructive tumour like lesions are perhaps less commonly recognised since they are liable to be mistaken for true neoplasms and treated surgically Fleischhacker and Seyfried[2] recording a series of 6 such cases, draw special attention to the frequency of primary affection of the throat and neck glands. This may make it difficult to distinguish the condition from lymphosarcoma or even lymphogranuloma. Of their cases two showed primary infiltrations about the neck or throat, one in the axilla, and one in the female breast. In several of them a leukæmic condition of the blood was not established till some time after the primary lesion had been recognised. In investigating these cases Fleishhacker and Seyfried derived much assistance from lymph gland puncture, and they strongly advocate this measure where hæmatological examination or sternal puncture shows nothing positive. As they remark, the early recognition of these cases is not only of scientific interest but is also important to the patient since it may increase his chance of beneficial treatment and lessen the risk of inappropriate surgery.

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[1] Physicians and Medical Care By Esther Lucile Brown, Department of Statistics Russell Sage Foundation New York: The Russell Sage Foundation 1937 Pp 202 $0 5

[1] Haram Joan, *Lancet* 1937, 1 1277

[2] Fleischhacker H and Seyfried H., Wien *Arch. inn Med.* 1937 30 177

HOSPITAL ARCHITECTURE

THE increasing interest taken in hospital construction is reflected in the *Architects' Journal* for June 24th, which is almost wholly given to the subject. In recognition of the predominant importance of function, an article by Dr. A. G. Ogilvie of Newcastle is included on hospital policy and development in the future, while the architect's point of view is expressed by Mr. D. R. Harper. Most of the number, however, is occupied by annotated photographs and plans of typical hospitals, general and special, constructed during the past five years, both in this country and abroad. It is, therefore, a work of reference to the latest ideas in hospital planning. Dr. Ogilvie deals generally with the types and sizes of hospitals that a modern community requires, and the inevitable interlocking of interests between voluntary and municipal hospitals and between adjoining districts. He hints at the need for a fresh attitude towards ward construction—a question lately touched upon in our columns[1] and dealt with in somewhat greater detail by Mr. Harper. The latter voices the feeling common among architects that developments in these and other respects are hampered by the unexperimental attitude of hospital managers and of the medical and nursing professions. He is not without hope however, for he says that "the influence of foreign practice and the general reorganization of the health services in this country will be the main elements in the new hospital architecture. In the meanwhile many schemes will follow the established English tradition, for hospital committees are conservative and for the most part base their requirements on past experience. The lead will come from those who are prepared to take risks and gradually a change of outlook can be expected."

The numerous plans and illustrations contained in this journal should be very useful to the administrators and medical boards of hospitals. The general lay out of a hospital is partly governed by considerations other than medical or administrative, such as the scope, contours and aspect of the site, and each plan must be read with this fact in mind. The new Westminster Hospital and the extensions of St. Bartholomew's and of the Hospital for Sick Children, Great Ormond-street, illustrate what may be done in the heart of London. The Birmingham Hospital Centre is unhampered by restrictions of space. From the standpoint of internal arrangement the Royal Masonic Hospital is one of the most instructive, since it represents a complete and welcome departure from the large ward. Limitation of size of ward and an experimental attitude to bed arrangement is also a feature of the Westminster, where the main wards are of 9–11 beds, and in some of them lengthways alignment, with screens, has been adopted. Of special hospitals Harefield, Middlesex, and Sully, Glamorgan (for tuberculosis), are fresh and attractive in design, while Paisley Infectious Diseases Hospital and a new style in isolation blocks at Tolworth Infectious Diseases Hospital merit examination. Of foreign hospitals, Paimio Sanatorium, Finland, presents a number of innovations, notably detached "lying halls" in veranda style for advanced cases, and Miller Hospital, Duluth, U.S.A., is an excellent example of compact planning for a small but extensible institution. Not least useful are a series of alternative model plans of ward, out-patient, operating, and kitchen units.

The vexed question of vertical versus horizontal lay out is discussed both by Mr. Harper and editorially, but is not finally answered. The cost of high buildings requires more study. The conclusion of the Departmental Committee on the Cost of Hospitals that economy in construction ceases at four stories is not quite in accord with some American experience, but the life of sky scrapers is problematical. In populous places sound proofing is a problem, and the *Architects' Journal* points out that it is only soluble at present if air conditioning and very heavy expense are no objections. Mr. Harper thinks it unlikely that English hospitals will ever have—or need to have—the elaborate air conditioning plant provided in many American hospitals, but the process has now become so efficient that its use, along with sound proofing, may have to be considered if new hospitals are to be built in towns or on busy highways.

"ARTERIAL CONTACT" IN MÉNIÈRE'S SYNDROME

ALTHOUGH three quarters of a century has elapsed since Ménière drew attention to the symptom complex of vertigo, tinnitus, and deafness, we are still ignorant of the precise mechanism of it. The various methods of treatment include two surgical operations—destruction of the membranous labyrinth by alcohol, and division of the acoustic nerve—and Dandy, who has divided the nerve in 160 patients, now reports[1] abnormalities in the cerebellopontine angle that may sometimes be responsible for the disorder. Most of these abnormalities are anatomical irregularities of the arteries. Thus in one case an aneurysm of the vertebral artery was found in intimate relationship with the acoustic nerve, and in other cases apparently healthy arteries pursued an abnormal course in contact with the nerve. Operation on one patient disclosed "an arterial loop totally encircling and tightly strangling the eighth nerve as if in a noose." In 10 per cent. of the cases an abnormal "arterial contact" was considered to be the unequivocal cause for the attacks, and if others are included in which the abnormal vessel appeared insignificant, the figure is increased to over 30 per cent. Discussing the various hypotheses from time to time put forward to explain Ménière's syndrome, Dandy gives it as his own opinion that the cause is always a lesion of the acoustic nerve or of its vestibular division. In two patients an angle tumour gave rise to typical attacks, and Dandy suggests that (contrary to the general belief) such tumours may not infrequently set up paroxysmal vertigo.

These observations are a valuable contribution to knowledge, but Dandy himself admits that the abnormalities noted can account for only a fraction of all cases of Ménière's syndrome Moreover it is difficult to understand how a congenital abnormality can of itself suddenly produce symptoms in a person previously healthy and how a static condition can cause paroxysms separated by intervals of normal health To explain these features one might assume some periodic alteration in the shape or calibre of the artery that is in contact with the nerve A similar mechanism is held by some neurologists to be a likely explanation for ophthalmoplegic migraine But whether stimulation of the eighth nerve can take place in this manner is doubtful for tests usually indicate that both cochlear and vestibular sensibility are diminished The direction of the nystagmus and of the sensation of rotation which occur in an attack does not provide consistent information as to whether the suspected nerve is the origin of abnormal stimuli or whether it is temporarily paralysed

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[1] *Lancet* 1937, 1, 225.

[1] Dandy, W. E.: *J. Amer. med. Ass.*, 1937, 108, 931.

THE WAITING OUT PATIENT

The out patient arrangements committee of King Edward's Hospital Fund for London has performed a useful public service by the issue of a memorandum on Time-saving Methods in Connection with Arrival and Registration of Out-patients with Notes on Other Early Items of Procedure [1] In this pamphlet of 35 pages the committee of which Dr H Morley Fletcher is chairman sets out clearly some practical suggestions for shortening the interval between the time when patients arrive at the hospital and the time when they see the doctor That this interval can be materially reduced by simple and inexpensive means has been proved by the experience of certain hospitals where special attention is given to this branch of administrative technique Like any other kind of technique it must be learnt and this memorandum should do much to teach it.

Probably the most important of the committee's suggestions is that there should be centralised supervision of the whole out patient department preferably by the secretary or other chief executive officer of the hospital who should be personally responsible and report periodically to a standing out-patient committee and to the medical staff The appointment of such a committee would it is thought have the advantage of ensuring that some members of the governing body would become familiar with the detailed working of the out patient department. Essential importance is attached to an efficient system of record keeping which should not only be accurate but include all the information that is necessary and none that is not, and facilitate the rapid entry of particulars of new patients and the rapid finding of papers relating to old patients A modern system should it is said provide that the original registration forms should easily be supplemented by the records of special departments that the patients should have no opportunity of reading their case sheets; that the original forms should give each department all the personal information needed and so make it unnecessary to ask a patient the same questions more than once and that each patient should have a serial number on all his papers To promote discussion of this important subject the committee has drawn up a model scheme of records which is explained in the memorandum The forms recommended are of three kinds (1) an identification card to be kept by the patient (2) a case-sheet a prescription-card and a folder all to be used during visits and returned to the registry and (3) an index card to be kept in the registry for reference The importance of record keeping is perhaps less appreciated by hospital administrators here than in the United States where in some hospitals the problem of transporting case-sheets from the registry to the departments concerned has been solved by installing a pneumatic-tube system To European visitors, however American methods occasionally seem too elaborate, and they have led native humorists to suggest that diagnosis and treatment may be carried out by study of documents rather than by examination of patients.

The memorandum discusses various methods apart from registration for reducing the waiting time in out patient departments, especially by approximating the time of arrival of the first patient to that of the doctor by shortening the preliminary processes and by giving different times of arrival to certain classes of patients—e g male and female adults and children old patients and new patients patients with doctors letters and those without The growth of hospital contributory schemes has increased the number of patients exempt from all almoner's inquiries other than those relating to after care and time is saved by sorting out these patients before they reach the almoner's room It may be noted also that the bringing of doctors letters has among its many advantages that of reducing the time spent by the patient before examination

The memorandum though primarily intended for hospital administrators may profitably be studied by private practitioners especially those with large practices in industrial areas Prolonged suspense in a doctor's waiting room is good neither for the patient nor the practice and it can only be avoided by taking thought

OPHTHALMIC BENEFIT: THE SORE POINT

An open letter from the Minister of Health to Sir Francis Fremantle emphasises the fact that an insured person cannot obtain ophthalmic benefit until he has as a first step been examined by his own insurance doctor Moreover the new regulations provide that every person claiming ophthalmic benefit shall be informed of his right to go to a medical eye specialist, if he so desires, whether that is the normal arrangement made by his approved society or not. Sir Kingsley Wood emphasises these points as he feels that they have not been generally understood. He omits however to say what the medical secretary of the British Medical Association knows to be a fact that little or no encouragement is given to the insured person to seek the advice of a doctor about his eyes; unless the right is exercised at the time of application for ophthalmic benefit the insured person has to follow the instructions of his society which generally means that he will be examined by a sight-testing optician Sir Kingsley adds that the object of the list of opticians to be drawn up by the new committee is to enable approved societies to have a list of persons to whom members can go for the purpose of obtaining glasses The list will in fact be described as A list of opticians recognised by the committee for the purpose of the supply of optical appliances to insured persons' But the value of this description is marred by the alteration of the first draft of the regulations to include a reference to services rendered by an optician incidental to the provision of an optical appliance This implies the recognition by the Minister of sight testing by opticians and an admission of their claim to be diagnosticians, which will surely make it increasingly difficult for the Minister to educate the public in the way he wishes His letter concludes with an emphasis on his belief that under the new regulations there should not be any set-back to the progress of useful schemes for a service of medical eye specialists working in coöperation with qualified opticians Unfortunately the medical profession does not share that belief

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[1] Published for King Edward's Hospital Fund for London by Geo Barber and Sons Ltd Furnival street London E.C.4 Price 1½d. post free

A MEMORIAL TO DR CECILE BOOYSEN

EARLY in 1935 a small clinic was opened at a house in the overcrowded district near the Angel with the object of giving advice on contraception to the poor women in the district, and of treating minor gynæcological ailments in mothers who are unwilling or unable to attend at hospital. Dr Cecile Booysen was the instigator of this piece of work, and through her efforts a committee was formed, money was raised, and suitable premises were found The work of the clinic quickly became known to local practitioners, and there are now four sessions, one in the afternoon and three in the evenings At two of these instruction is given on birth control, one is a psychological session for women who have dyspareunia or other difficulties of marital adjustment, and the fourth is a gynæcological session supported by three weekly treatments from the clinic nurse It was one of Dr Booysen's ambitions that centres of this sort should be made available for working class women elsewhere The clinic at Spencer-street is supported entirely by voluntary contributions, and Dr Booysen's co workers are raising a fund to endow the centre, the name of which will be changed to the Cecile Booysen Clinic Contributions should be sent to the secretary of the Goswell Women's Welfare Centre at 39, Spencer street, London, E C 1

THE HEADQUARTERS OF THE NURSING PROFESSION

THE convenient tradition that the nursing profession sets up an austere ideal for its members, scorning the amenities of life, can hardly survive inspection of the new home of the General Nursing Council for England and Wales This building, No 23, Portland place, is nearly opposite the former premises of the council. It is not only admirably adapted to present and future needs—the general register, now including some 70,000 names, will have to be greatly expanded if the country is to receive an adequate nursing service—but is æsthetically satisfying both without and within The council has changed its habitat three times since it was appointed in 1920 to administer the Nurses Registration Act, 1919 It moved from offices at the Ministry of Health to 12, York gate, Regent s Park, in 1921, but owing to the rapid development of the work this house soon proved to be too small and in 1925 the council acquired the lease of No 20, Portland place, taking on an additional house next door in 1933 Shortly after the completion of this extension the British Broadcasting Corporation started negotiations for the purchase of both houses, which resulted in an agreement to give up the premises in exchange for the sites of Nos 23 and 25, Portland place on the other side of the road and a new building, which was opened on June 25th by the Princess Royal. Some of the special characteristics of this four story edifice, of which the architects are Messrs Newberry and Fowler, were noted in our columns last week. No description of cleverly restored paintings, massive mahogany doors, fireplaces, and other lovely features rescued from the demolished Adam houses on the present site or imported from the old building could give an adequate impression of the beauty of the new interior, this is largely due to the skill with which drapery, lighting, and colour have been combined in their setting English nurses will have good reason to be proud of showing their official headquarters to colleagues from other countries who will assemble this month in London for an international congress

THE DURHAM CENTENARY

ON June 1st, 1837, a statute, passed by the dean and chapter of Durham and approved by the bishop, received the royal assent and a week later the first degrees of the University of Durham were conferred In the autumn of the same year Bishop Wm van Mildert handed over Durham Castle and its precincts to become the centre of its academic life This is the centenary which is being celebrated this week. The school of medicine and surgery at Newcastle upon Tyne celebrated its own hundredth anniversary nearly three years ago,[1] for it was on Oct 1st, 1834, that the hall of the Barber Surgeons in the Manors was formally opened This week's centenary has, however, also a significance for medicine in view of the new constitution which is now awaiting the approval of the King in council, for under this new constitution, while the Durham division returns to something like its old organisation, in Newcastle the school of medicine and the Armstrong College will be united in a new King's College The economic situation which led to a postponement of these centenary celebrations is now easier and the prospects of the University of Durham with its two divisions under federal control are bright at the opening of the second centennium

THE New York correspondent of the *Times* announces that a fund of about $10,000,000 (£2,000,000) has been given to Yale University for the investigation of cancer The donor is Mr Starling W Childs and the money will form the Jane Coffin Childs memorial fund for scientific research

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[1] *Lancet* 1934 2 821

WORKERS' RISKS FROM ETHER—The clinical use of ether has made common knowledge of several properties that the vapour possesses Everybody knows that inhalation of it may induce nausea or vomiting, and often leaves a taste or a smell which clings about the mouth and breath for hours after the circulation is free Other less familiar qualities have been brought to light through the industrial uses that are made of ether Some of these are described in an article by Prof W Dominik of Warsaw in the *Industrial Safety Survey* for March-April (p 34) They depend on the volatility and fat-dissolving powers of ether Fat may be removed from the skin of the worker who is much in contact with ether In consequence the epidermis becomes brittle, tears easily and is subject either to acute inflammation or to infection by bacterial penetration. Mental symptoms due to inhalation of ether vapour are not uncommon, but disappear as soon as the sufferer is withdrawn from the ether-laden atmosphere Dominik believes that the causes of ether explosions are not yet elucidated, but the unexplained kind to which he is alluding are not met with during the employment of ether for anæsthetic purposes These are apparently explosions due to decomposition of ether for example, in drying ovens, when ' the resulting radicals, by chain reactions, bring about a deflagration of the ether vapour or other organic substance present in the surrounding hot air

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM A READER

I

THERE is nothing in science more thoroughly abused than the biological approach I am led to that conclusion by considering what the tone of these comments would probably be A commentator strings more or less gracefully a column of paragraphs on a thread of prejudice and if there is any marked bias or professional twist of mind I would admit in my remarks it would be a biological one

Having written the word biological I find it slightly distasteful and feel that I would do well to delete it But it is perhaps better to let it stand and inquire why it should raise doubts of its propriety On the face of it to be thought biologically minded is fairly flattering Biology as a word has an air It suggests clean white laboratories, high thinking and hygienic living It has an ardent Utopian prescient ring about it and it seems capable of surviving even the blasphemous intents with which the Chesterbelloc school endows it Perhaps the very profusion of images it calls up makes it suspect the term is too extensive To lay claim to a biological mind may suggest to one a cold blooded eugenist and to another only the traditional figure of the bespectacled gentleman chasing butterflies That degree of confusion is natural and harmless for the man in the street rightly considers that if he had the time for example to build a formicarium and gather material on the community life of ants he would be as much a biologist as any advanced laboratory worker Animals are there for anyone to study and White of Selborne is as good a model for the amateur as Henry Cavendish

It is not the lack of precision that makes the term unpleasing Biology suffers not from the vagueness of the man in the street but from the excesses of the man in the Bloomsbury attic and it is there I think the distaste arises. Living things are anybody s province and with the Facts of Life available in fortnightly parts it is open to anyone to become a Biological Thinker And no one who has suffered from the biological interpretations of the parlour sociologist will dismiss this view merely as the outcry of a jealous professional.

The trouble lies in the popular books on science They are both desirable and necessary for anyone who wishes to understand what is going on in the world but popularisations, like proverbs are only half true Too much space is wasted on the wonders of science and the way that scientists fumble and think is neglected The marvels of the universe appear to induce in the reader an intellectual arrogance where only intellectual curiosity is relevant and an impatience for the millennium where the fact that a Utopia is even conceivable is the only comfort of the writer

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One of the most stultifying conceptions that popular biology has made current is the analogy between a metazoon and an animal community After comparing the lone amœba with the happy sponge in which cells have banded together for mutual convenience how tempting it is to regard a community as an organism made up of so many cell individuals But *membra sumus corporis magni* is profoundly unhelpful when translated into a sociological sphere What members ? And what is the morphology and physiology of this body ?

Of course it is only a useful abstraction designed to further progress but what improvers bother to amend the abstraction ? They go for the animals behind it

Let us take a monetary abstraction and divide a community about its average income into the high and low incomes Then re divide it about its political centre Few would dare guarantee that the bulk of the poorer people were in the labour socialist division A British socialist might agree that the National Government has the support of many of the exploited classes but would hope that with education these would see that their road to economic freedom lay to the Left. The political division would in fact neatly coincide with the economic only when the organism knew what was expected of it by its creator

Marx is said to have made a profound and brilliant analysis of Darwin s theory when he pointed out it was an interpretation of nature in terms of a bourgeois society But Darwin at least interpreted one community in terms of another whereas Marx went one step further from reality and invented an organism out of the economic behaviour of man As a technical procedure, this was fully justified by its success but it is difficult to separate man from his economic characteristics, and a religious belief in the validity of the organism implies that man must be made to fit it The totalitarian state however attractive in its simplicity of function is the most depressing fruit of biological analogies of this kind.

Medico biological analogies are even more attractive A bus strike is a thrombosis, a slum district an ulcer and the anthropomorphosed cancer a powerful metaphor in the mouth of the reformer For what nation, menaced by the superior competitive powers of alien constituent cells could resist the dictator-surgeon s conviction that it can be saved only by the ruthless extirpation of this malignant growth of community life.

* * *

We have in this country a tradition of amateur biologists, but when I consider how appalling mere speculation can be I suspect that their success is due more to their literary charm and brilliance than to the closeness of their argument Samuel Butler is the really great figure in this line He had a heartening way of sweeping through his speculations with a high hand. He had too a niggling mind that went on elaborating points down to the smallest detail pushing analogies as far as verbal juggling could decently take them. Happily he possessed a sense of humour ; he could not resist tagging a *non sequitur* on to a shaky illustration and the neatness of the wit deludes the unsuspecting into believing in the closeness of the argument The quality of his humourless speculation is occasionally dreadful When in the Note Books he writes the reason why the offspring of protoplasm progresses and the offspring of nothing else does is that the viscid nature of protoplasm allows vibrations to last a very long time and so very old vibrations get carried into any fragment that is broken off . . ." there is nothing to do but turn over in haste and forget the portentous nonsense in the demure theology of "A Lawyer's Dream of Heaven. Every man reclaimed his own property at the resurrection, and each tried to recover it from his forefathers." Brilliant as Erewhon and Life and Habit are, it is the exuberance rather than the biology that convinces. But no one thinks the worse of them for that.

There must be few English speaking scientists under forty who did not revel in the enormous exuberance of Wells's scientific romances. Wells had a biological training. Had he received none what a welter of effective nonsense he might have loosed on a generation seeking for a sign. As it was, he gave it several very good ones. No matter what holes one picks in those books, they remain convincing, heady, and stimulating. For plausibility his romances stand alone. He does it not by any careful attention to detail but by the neatest tricks of reportage, that automatically close the door on criticism.

It is a commonplace to name him a successor of Jules Verne's. But Verne did little more than put his up to date scientific knowledge into adventure stories. He played with facts, not ideas, and if his ingenuity failed him, was capable of the crudest literary tricks. At the end of one novel, Hector Severac's little party, and the slice of the Mediterranean basin on which they had been carried into space by an earth grazing comet, are nearing the earth again. The excitement rises as the world looms larger and larger . . . and Verne, by a staggering coincidence, pops the missing portion back exactly into its original place. Then, feeling that probably this was too much for the reader, airily drops the intensely matter of fact narration that has hitherto characterised the whole book, and leaves his hero dazedly wondering whether he imagined the whole adventure. Wells would never have let the party go into space unless he knew precisely how the return could be plausibly staged. He never gets out of key, and having invented a particular brand of reality he never loses it. The invading Martians *are* invincible, but they are also bacteria free, and the world is saved because on earth they succumb to the feeblest infections. The Time Traveller can never be got at to verify Wells's extraordinary report of him, because he has never returned from his second journey. Mr. Fotheringay, in one of the most satisfying of Wells's fantasies, is neatly made to will everything back as it was before he voluntarily renounces the miraculous will power that involved the whole world in a shattering catastrophe.

* * *

Literary play with biological ideas, from Butler down to dreary rehashes of current science like Brave New World, does biology no harm in the sense I have tried to indicate. The real danger in the biological approach is the imposition of an alien technique of thought on a problem that should dictate its own modes of solution. A jelly fish is an organism, and nothing in the world can take away its organisation. A nation is an abstraction, and no manipulation of its origins can ever give it reality.

The abuse of the method isn't due only to a failure to appreciate its fallacies. Analogies with biological systems are attractive because, if they are sufficiently close, the conception acquires whatever prestige that biology may possess. But the technique and natural history of prestige lifting is too complex to be dismissed in a remark or two, and I must pursue it along the thread of my prejudice next week.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Doctor Signs Patient's Will

IN Pickerill *v.* Pickerill the medical attendant of the deceased testatrix had an unusual but entirely proper part to play in the making of her will. The patient had almost lost the use of her right hand. The terms of her will, framed according to her directions, were read out to her by her doctor at her request. As she was physically unable to sign it, he asked her to squeeze his hand if she approved the terms and if she wanted him to sign on her behalf. She did so; he signed, and two witnesses attested the signature. This procedure, presumably arranged on legal advice, was undoubtedly in order. The Wills Act of 1837 requires three formalities. First, the will itself must be in writing. Secondly, it must be signed at the foot or end thereof by the testator "or by some other person in his presence and by his direction." Thirdly, there must be attestation by two witnesses in the testator's presence. A mark or initials will suffice to represent signature whether the testator can write or not. An invalid's hand may be guided in making the mark or initials; but it is not a valid signature if a dry pen is passed over a signature already written. The dry pen adds nothing and makes no sign; hence it is useless as an authentication. A rubber stamp will do; two years ago the impression of an inked thumb was accepted as a sufficient signature; if a mark is made, any kind of mark will do; a cross is not essential.

The probate action in Pickerill *v.* Pickerill was full of difficulties. The will could not be found and the court had to be asked to accept a copy. The doctor was dead; but the attesting witnesses were able to explain what had happened. They proved that the squeeze of the hand was intended (as a nod of the head might have been) to be a direction to the doctor to sign on behalf of the patient, and the Wills Act was thus complied with.

Holiday Shacks and Demolition Orders

The Worthing Corporation has been defeated in an endeavour to apply the demolition provisions of the Housing Act to two houses at Worthing which the county court judge described as "shacks" or holiday homes. The Act enables local authorities to require the repair or demolition of "any house which is occupied, or is of a type suitable for occupation, by persons of the working classes." The Act has in mind the elimination of houses "unfit for human habitation." The judge, however, on the owner's appeal against a demolition order, came to the conclusion that, being "shacks" or holiday homes, the buildings could not properly be described as houses occupied by, or suitable for occupation by, the working classes.

This does not mean that the local authority is powerless to enforce decent standards. Another court might draw a different conclusion from different facts. There are special provisions, too, in our public health laws for dealing with tents, vans, sheds, or similar structures used for human habitation. These can be treated as statutory nuisances if they are in such a state or so overcrowded as to be prejudicial to the health of the inmates or if their use by reason of the absence of proper sanitary accommodation or otherwise gives rise whether on the site or on other land to a nuisance or to conditions prejudicial to health And local authorities can make by laws for promoting the cleanliness and habitable condition of tents vans sheds and similar structures used for human habitation Any court before which proceedings are taken in respect of any such statutory nuisance can prohibit the use of the structure for human habitation Such is the language of the new Public Health Act which takes effect next October Similar provisions already exist under various enactments which the new Act will then supersede

IRELAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL CANDIDATES FOR THE DÁIL

AMONG the candidates for election to the Dáil this week were twelve medical men Of these five seek re election three, although not members of the last Dáil had seats previously one was formerly a Senator and three have not been members of the Oireachtas as yet Two of those who seek re election are members of the present Government Dr James Ryan as Minister for Agriculture and Dr C Ward as parliamentary secretary to the Minister for Local Government and Public Health They are candidates for co Wexford and co Monaghan respectively The others seeking re election are Dr J J O Reilly who represents co Cavan and Dr T F O Higgins who represents Leix Offaly and Dr P J O Dowd who has hitherto represented co Roscommon as a member of the Government Party and now seeks election as an Independent. Dr Myles Keogh Dr F Humphries and Dr S Tubridy who were members in previous Parliaments are candidates in South Dublin Carlow Kildare, and West Galway respectively Dr W O Sullivan who was a member of the late Senate from its establishment until its abolition is a candidate in the Opposition interest in South Kerry The three candidates who have not previously been in the legislature are Dr P Doyle who seeks election in Leix Offaly Dr J Hannigan in South Dublin and Dr M Brennan in co Sligo At the time of its dissolution the last Dáil contained eight medical men Of these three are not seeking re-election—Dr R E Davitt one of the representatives of Meath Dr J B Lynch one of the representatives of South Dublin and Dr R J Rowlette, one of the representatives of the University of Dublin which is no longer entitled to parliamentary representation

PARIS

(FROM OUR OWN CORRESPONDENT)

THE VENEREAL DISEASE CAMPAIGN IN FULL SWING

THE Ministry of Public Health has published in the *Journal Officiel* for May 2nd three circulars on venereal disease The first deals with the personal medical passport to be kept by the subjects of venereal disease The identity of the card s owner is indicated by a number no reference being made to his name The doctor in charge is supposed to enter on this passport all pertinent details concerning the diagnosis clinical observations operations and other treatment the findings of laboratory tests and instructions to be followed by the patient. Should he change his domicile and cease to attend the dispensary issuing his passport it is to be given to him or to his new doctor If the passport is mislaid a facsimile can be prepared from the records kept at the dispensary the patient has attended. This precaution is designed to meet the case of the patient who mislays his passport with frank carelessness or the more or less veiled hope that in shedding it he somehow or other also sheds the obloquy and obligations it imposes on him

The second circular concerns the organisation of venereal disease dispensaries services and laboratories The third deals with the allotment of 19 areas to as many regional inspectors henceforth to be responsible for the satisfactory working of the venereal disease organisation in their own spheres. These regional inspectors have been chosen from among the greatest authorities in France on venereal disease and many of them are university professors The district of Nancy for example is put in charge of Prof Spillmann Nantes in that of Prof Bureau Paris in that of Prof Gougerot and Toulouse in that of Prof. Nanta Yet another circular dated April 16th outlines the proposed machinery for the administrative coördination of measures against venereal disease Local authorities are told how to work with the central authorities, and civilians how to work with the Army In all garrison towns, the civil medical authorities must meet the Army medical authorities at least once a month so as to deal in union with their common problems as they arise.

CONTROL OF B C G INOCULATION BY TUBERCULIN TESTS

A communication made to the French Academy of Medicine on June 1st by Dr H Foley and Dr L Parrot of the Pasteur Institute in Algeria dealt with the still vexed question of the control of B C G inoculations by tuberculin skin tests. Since April 1028 these investigators have studied the reactions to B C G and to tuberculin of children up to the age of 15 living in an isolated community in the Sahara where tuberculosis is comparatively rare These children were given B C G by subcutaneous injection or by the mouth each child being reinoculated from time to time At least twice a year for several years they were tested with tuberculin by both the Pirquet and the Mantoux test whose results were controlled after 48 hours. As many as 39 of 166 children repeatedly inoculated with B C G were consistently Pirquet negative although the Pirquet test was repeated from 5 to 16 times Among these 39 children were 31 who gave a positive reaction to the Mantoux test While only 75 per cent of these B C G children were tuberculin positive to judge by the Pirquet test as great a proportion as 94 8 per cent. were so according to the Mantoux test. This unreliability of the Pirquet test as a measure of the action of B C G was still more stressed when only those children were considered who had received a single dose of B C G given by the mouth In a group of 23 such children there were only 2 giving a positive Pirquet reaction four months after the administration of B C G whereas 20 out of 24 gave a positive reaction to Mantoux s test Children up to the age of 15 and not inoculated with B C G were found in another isolated Sahara community to be invariably Pirquet negative whereas 12 of 59 such children gave a positive reaction to Mantoux s intracutaneous tuberculin test The point Dr Foley and Dr Parrot are anxious to drive home is that B C G inoculation may be discredited by the misleading evidence of Pirquet tests, and that B C G may be given to persons already harbouring tubercle bacilli, whose subsequent activities may bring it into disrepute

VITAL STATISTICS

M Marcel Moine, statistician to the Comité National de Défense contre la Tuberculose, recently presented to the Academy of Medicine a statistical study in which he compared the birth rates and death rates in France of the period 1846–55 with those of 1933 He calculated that between the two periods under review, the mortality has diminished from 240 to 160 per 10,000 inhabitants, and that this improvement has been greatest between the ages of 1–4 in which it has amounted to 85 per cent After the age of 85, the mortality has, curiously enough, become higher in 1933 than it was in the period 1846–55 Had the French birth rate remained at the generously high level of this period, France would by now be peopled by 89 millions On the other hand, had the old death rate been maintained, then France would now be down to a paltry 28 millions M Moine's graphs, even more immediately illuminating than his unadorned figures, showed how England and Wales, France, Germany, and Italy have behaved in the period under review in the matter of births and deaths

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

THE DOCTOR AND THE STATE

As predicted in my last letter the proposals for federal coöperation in the provision of medical care adopted by the important New York State Medical Society were brought before the house of delegates of the American Medical Association assembled in Atlantic City for their annual meeting on June 7th After two days the house of delegates accepted the principle expressed in the New York society's resolution that the health of the people is a direct concern of the Government and that a national public health policy directed toward all groups of the population should be formulated. They chose however to ignore such proposals for its formulation as had been put forward by New York and preferred to express an attitude of "passive receptivity," to borrow a happy phrase from the correspondent of the *New York Times* A few hours after this decision was arrived at Senator Hamilton Lewis transmitted a personal message from President Roosevelt inviting the doctors to coöperate with him "in such methods as you would jointly find would be to the service of the helpless and the afflicted, within such province as you felt Government should undertake" Senator Lewis in his capacity as chairman of the Senate's subcommittee on social legislation, went a good deal further and intimated that an amendment to the *Social Security Act* is to be submitted to the present session of congress to provide for adequate medical care to those who cannot afford to pay for it Senator Lewis indicated that the Government has no thought of interfering with the relationship between the doctor and his patient but does regard the licensed doctor as being a responsible officer of the State charged with responsibility for the health of the citizen"

The position is then, at the present, that the profession and the Administration have agreed to sit down at the same table in a friendly spirit but that the cards are still all face downwards A sentence in the report of the board of trustees of the A M A —"the available evidence indicates that to day throughout the United States the indigent are being given a high quality of medical care and service"—indicates that play may have to proceed while some leaders of the profession continue to keep their eyes tightly shut

AT THE ANNUAL MEETING

Belated recognition by the house of delegates that the giving of contraceptive advice is a proper function of the physician has caused some protest from a Roman Catholic priest and from the Federation of Catholic Physicians' Guilds but is generally accepted by the press as a sign of grace

Among the more interesting papers presented at the scientific sections is one by Dr Allan L Barach attributing a number of recent airplane accidents to "oxygen want" in the pilots He pointed out that before the accident in which Senator Cutting was killed the pilot had been flying continuously for nine hours at altitudes between 10,000 and 12,000 feet The effect of oxygen want upon the brain he considers to be more serious than its effect upon the heart, though patients with symptoms of heart disease should be warned against transcontinental flying until provision is made for adequate oxygen inhalation An atmosphere corresponding to 15,000 feet altitude impairs reason, judgment, control, and memory in the space of two hours

The present enthusiasm in the campaign against venereal disease found expression on the last day of the conference when three Baltimore physicians reported highly successful results in the treatment of gonorrhœa with *p* aminobenzenesulphonamide,[1] and Dr Vonderlehr of the public health service urged that gonorrhœa should not be overlooked in the present campaign against syphilis Dr Walter Clarke, an American graduate of Edinburgh University, described the programme that he has organised in New York City for the campaign against syphilis The health department laboratory makes blood tests for physicians on request, and with the aid of Social Security funds, the department now furnishes drugs free for treatment of indigent patients or those unable to pay full fees A nursing service is also available on request The department furnishes to clinics and to practitioners instructive pamphlets for patients A system of reporting cases has been instituted by which practitioners report cases of venereal disease For this purpose a form and an envelope with postage paid are provided by the health department

BUDAPEST

(FROM OUR OWN CORRESPONDENT)

NOISE

AT a congress held by the Budapest League against Noise at the beginning of May it was agreed that excessive noise is harmful to health, and ways and means of preventing it were discussed The chief medical officer of health for Budapest described the devices for eliminating noise which must now by law be incorporated in all new buildings There were many other interesting papers and each was followed by a lively discussion.

MEMORIAL TO SIGMUND PURJESZ

Dr János Ángyán, professor of internal medicine at the University of Pecs, lately delivered a lecture in memory of Sigmund Purjesz, formerly professor of clinical medicine at the University of Budapest whose energetic fight against the cholera epidemic which raged in Hungary during the 'nineties probably saved Western Europe from the ravages of this scourge. Prof Ángyán said that it was the duty of a professor of medicine to be informed on current problems of social medicine and to show tolerance in dealing with questions of ethics arising in his practice He must be able to help his patients to adjust themselves to the changes of everyday life and be able to bring forward practical solutions to their problems Purjesz had considered that this could best be achieved by a friendly relationship between doctor and patient which was well exemplified in his own large consultant practice He always strove to increase the public's faith in the medical sciences Prof Ángyán went on to say that in the world of to day where social changes are so swift and when medical practice is also being rapidly modified it was more important than ever to maintain between doctor and patient that spirit of friendship which Purjesz had advocated

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[1] This work was reviewed in THE LANCET of June 19th (p 1470)

KORÁNYI SCHOOL

When Prof Alexander Korányi had to retire from his chair on reaching the age limit his clinic was disbanded Voluntary contributions have however made it possible to re-establish his school in a well-equipped hospital with a medical and nursing staff largely drawn from the personnel of the former clinic It is thus hoped that the scientific work of his school may be carried on without interruption.

THE MEDICAL ART SOCIETY

THIRD ANNUAL EXHIBITION

THE outstanding painting at the third annual exhibition of the Medical Art Society now being held[1] at the house of the Royal Society of Medicine 1 Wimpole street W 1 until July 14th is Mount Aureol Sierra Leone (31) by A C Dalzell. Through a pattern of interwoven tree trunks, of variegated hues, there is a glimpse of a sunlit settlement. The firmly handled branches bend and writhe with a natural rhythm and one is reminded of similar studies of trees by Ethelbert White or of Epstein's water colours of Epping Forest An artist with a true feeling for tree growth is rare In his pleasant study of trees beside a waterway (10) A B Hewlett also makes the pattern of the leafless branches the main feature But his branches have the air of being stuck on No medical artist was fonder of trees than Squire Sprigge Four of his water colours are shown this year and in all of them trees and foliage are the theme The best of them is probably The Pond (49) but New Forest Trees (52) sketched before the early spring shoots have appeared is a tender note of graceful tree forms

As last year about three quarters of the subjects are landscapes There are about a dozen still life paintings, very few portraits, one good figure study (of men working on a chalk bank (74) by Charles Pannett) and no interiors or problem pictures While not as varied an exhibition as last year the general standard of work is appreciably higher

Among the oils an attractive little painting by H D Gillies is a view of Pegwell Bay from the Maiden Sandwich (4[illegible]) The line of the edge of the green continued by the foreground bunker is good composition while the flag and its shadow play their part Charles Pannett's view of Wapping Reach (2) is a vivid study of shipping barges and riverside wharves with convincing local colour but with an unconvincing sky Helena Wright's five studies of Marra Kech provide an exotic note and John Rammell has gone to the Pyrenees for his Punta Espada (9) and H D Gillies to Iceland for his Headwaters of the Landa (46) Cutting Peat in Connemara (36) and 'Sands at Killary Bay Connemara (26) both by Edith R Magill reveal a warm sympathy for the Irish mountains and countryside The sun flecked courtyard (40) is something of a novelty as it is an attempt by T H C Benians to depict the Italian courtyard from the description in the novel 'Anthony Adverse.

Portraits this year are disappointing the best being that of a man by R V B Emmons (38) H B Maitland's portrait of a George Belcher type of charwoman (18) just verges on caricature. Among several very good flower studies in oils the cool Christmas Roses (1) by Cuthbert Lockyer the vibrant Chrysanthemums (24) by W Wilson and the more formal lily flower piece (23) by Emanuel Miller are conspicuous.

The best of the water-colourists showing this year is probably E W Twining He has three exhibits and Sheep fold Hackpen Hill, near Marlborough' (48) shows his technical skill to good advantage The elements of this picture are beautifully simple, and it relies for its effect on moist washes which make full use of the white of the paper Another capable water-colourist is Henry Wilson The Old Windmill (105) was almost too obviously a good subject for an artist But in West Street Corfe Castle (106) he convinces one of his interest in the old houses the church tower and the curious fall of the road. John Hay's work is also looked for He has sent a study of a magnificent copper beech tree (92) and a sensitive view of St. Ives (93) Cornwall is also represented by C Lockyer's St Michael's Mount (104) Devonshire by Robert Worthington's Seaton Bay' (81) a good impression of rocks and spray and H S Raper's Sidmouth (50) and Dorset by Robert Worthington's 'On Batcombe Down (76) There is capable landscape work by J F Robinson E A Barton and H Elliott Blake

A few unexpected subjects are hung Philip Manson Bahr has two studies of the female eyas goshawk baiting and 'scanning' (99) E A Barton's 'After the Squall' (98) is a startling piece of meteorological notation. Among the pastels Herbert A Lake's likeness of Viscount and William (70) is an affectionate study of two horses at grass. R Hallam has sent three sepia drawings, called 'The Discussion' (114) 'Flower Sellers (111), and The Orchestra (110) They stand by themselves as pictorial comments on life which few doctor artists seem inclined to make The picturesque is another note seldom met in this exhibition It is, however to be found in C Lovatt Evans's Street Scene in Bruges (68) and Oliver Horsley Gotch's Bar le Duc (101) the latter making good use of broad brushwork

A notice of the exhibition would be incomplete without reference to I Spira's expressive sculptures The group of the three Volga boatmen (11) suggests well their ponderous haul while the musical phrase engraved on the base leaves one in no doubt as to their identity The group of figures (12) is not linked to a subject but is full of feeling Who are these weary peasant folk led by an aged man and dragging a child after them? It is a compelling piece of modelling, whose realism makes the sculptured medallion done by John Bacon, R.A , in 1768, which is on the wall immediately above it, seem a piece of pedantry

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[1] The exhibition will be open from noon to 6.30 each day (except Saturday) up to and including Wednesday July 14th Admission is free without ticket

KING EDWARD'S HOSPITAL FUND FOR *LONDON*

THE annual meeting of this Fund was held at St James's Palace on June 25th The DUKE of KENT, in the chair, read the following message from King George —

> I would like to assure the Council of my constant interest in the work of the King's Fund for the hospitals of London, and of my gratitude to those who, by their devoted services, contribute so much to its welfare *I send my best wishes for the future of the Fund and of* the hospitals which it helps to support

The Duke said that the Fund had received last year, in subscriptions, donations, and legacies, about £98,000, besides the income from investments, and that this left a deficit on the year's working To the annual distribution of £300,000 had now been added the district nursing distribution of £2000 This was based on the number of patients sent by hospitals *to the district nursing associations, to receive nursing* attention at home instead of at the out patient departments, and it was thus part of what the King's Fund was doing to reduce out patient waiting

The Fund had acquired other functions *than* the collection and distribution of money There was, for example, the administration of the stock of radium lent *to hospitals, which had been increased to 17 grammes* Four special reports had been prepared and published for the assistance of hospitals The first was an explanatory memorandum on the Voluntary Hospitals (Paying Patients) Act, which was passed in May, 1936, and facilitated the provision of pay beds in addition to ordinary beds The second was a new memorandum on fire precautions at hospitals, and it embodied the latest experience of both the voluntary and the London County Council hospitals The third report showed how greatly the voluntary hospitals of London had increased their work, their expenditure, and also their income during the last 15 years, in spite of having to face the rise in prices in addition to the constantly increasing cost due to the advances of medical science. The fourth was the new memorandum (annotated on p 31) on the reduction of waiting in out-patient departments The King's Fund had also taken a leading part in the conferences that led to the numerous hospital flag days being combined They were greatly indebted to Lord Wakefield for a generous gift that had enabled the committee *to undertake the preparation* of a new hospital film During the present month also an anonymous donor, who had given £1000 each year during the past few years, had transferred to the Fund about £30,000 in securities, which should bring in that income permanently

ACCOUNTS FOR 1936

SIR EDWARD PEACOCK, the honorary treasurer, in moving the adoption of the accounts, said that it was very desirable that there should be no reduction *in the distribution of £302,000, but there must be a* substantial increase in income if this was to be avoided Until 1934 current receipts provided the amount required In 1935, however, there was a shortage of nearly £7000 and in 1936 another shortage of over £7000 But for some exceptional income from investments during the year the deficit would have been very much larger For eight years legacies had remained very steady at between £60,000 and £70,000 a year, but in 1936 they had amounted to only £44,000 On the other hand, large donations had been kept up mainly owing to anonymous gifts of £15,000 and £10,000 in the last two years from one whose donations in the past fourteen years now totalled £88,500 The anticipated permanent decrease in income from investments owing to the Silver Jubilee distribution and to the fall in the value of money had so far been balanced by an increase in certain dividends and by the income from the capital gift of £20,000 from King George V which now appeared permanently on the balance sheet He hoped that they might be able also to create a special fund for assisting hospitals to carry out some specially important scheme or to overcome unusual financial difficulties The needs of the hospitals did not grow less, and those who recognised the claims of the London hospitals but had no special knowledge or attachment to guide them in choosing a particular hospital, would find in the King's Fund the ideal agent for carrying out their wishes in the most effective way

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THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Capt T Creaser to rank of Surg Rear Admiral

Surg Capts R F P C‑ry *to Pembroke for* R N *Hosp*, Chatham, and H M Whelan to *Afrikander* for R N Hosp, Cape of Good Hope

Surg Comdrs W P Vicary to *Cardiff* J D Bangay, O B E, to *Victory* for R N B, T Madill to *Victory* for R N Hosp Haslar J F M Campbell to *Drake* for R N B E B Pollard to *Pembroke* for R N B, and W J Colborne and J Hamilton *to President* for course

Surg Lt Comdrs C H Egan to *Pembroke* for R N B, H A Clarke to *Norfolk* S K. Foster *to President*, C D D de Labilliere to *Pembroke* for Chatham Dockyard, and F G V Scovell to *Orion* (on recoming)

Surg Lt Comdr J G Maguire to be Surg Comdr

Surg Lt H E B Curjel to be Surg Lt Comdr

Surg Lt C V Harries to *Exmouth*

Surg Lts P G Stainton to *Drake* for R N Hosp, Plymouth, R M Kirkwood to *Victory* for R N Hosp, Haslar and W B Taylor to *Pembroke* for R N Hosp, Chatham

ROYAL NAVAL VOLUNTEER RESERVE

Proby Surg Lt T D G Wilson to be Surg Lt

ROYAL AIR FORCE

Flight Lts J C Blair L E A Dearberg R S B McClean, and D J Sheehan have been provisionally selected for permanent commissions, subject to physical fitness

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Lt Col R F Bridges, *R A M C*, *has been awarded* the Alexander memorial prize for the year 1936 consisting of a gold medal and a sum of £40 The prize is awarded annually to an officer of the R A.M C for professional work of outstanding merit

Maj A G Harsant, O B E, R A M C, has been awarded the Leishman memorial prize for the year 1936, consisting of a silver medal and a sum of £30 The prize is awarded annually to an officer of the R.A.M C, or of the Army Dental Corps for work of outstanding merit

Dr R Lowthwaite Colonial Medical Service, has been awarded the North Persian Forces memorial medal for the year 1936 for his paper on the Pathology of Tropical Typhus (rural type) of the Federated Malay States, published in the *Journal of Pathology and Bacteriology*, January, 1936 The medal is awarded annually for the best paper on Tropical Medicine or Hygiene published in any journal during the preceding twelve months by a medical officer, with less than twelve years' service

SIR SQUIRE SPRIGGE

THE following are extracts from some of the notices that have appeared in daily and weekly journals on the death of the Editor of THE LANCET

British Medical Journal

Squire Sprigge was a man of exceptional ability and force of character His mind had been trained in the discipline of the classics under a great head master its edge was sharpened by the study of science at Cambridge and made sharper by the study of mankind at St George's The practice of medicine had no appeal for him what he liked was the battle of life, the contest of mind with mind. He was widely read without bookishness witty of speech, incisive of pen when the mood took him and dexterous to a high degree in the handling of men and situations the more difficult the tangle or the tougher the problem the more he enjoyed finding a way through or round it. When on his mettle—and until the last few years he was always ready for anything or anybody—Sprigge could hold his own against a keen academic brain or in combat with hard business wits By nature clear cut and by habit undemonstrative Squire Sprigge had no use for sloppiness or gush But he felt and inspired real affection and thought much about his friends and helped them with both hands when need arose. Wit and humour do not always go together S S S had both, and a keen appreciation of them in other people. He was a most stimulating and delightful companion at work or at play a wise counsellor a loyal son of his school his college and his hospital and above all things faithful to the great journal which he served for forty five years.

One more thing should perhaps be said here The thirty years' war between Ernest Hart and the Wakley family which poisoned the relations between *British Medical Journal* and *The Lancet* was abhorrent to urbane and magnanimous men like Dawson Williams and Squire Sprigge. Hart's death gave them the opportunity to make open peace and establish private goodwill at each corner of the old block of houses in the Strand. Forty years have passed and the two journals now live further away in new homes The healthy rivalry goes on but there has been no break in the cordial relationship begun by Williams and Sprigge and continued by their fellow workers

The Times

Medical journalism owes him a great debt and in maintaining the highest traditions and promoting the efficiency of his profession he did a national work Under his control *The Lancet* steadily kept on its way altering with the times, but always regarded with increasing respect by the profession. Its stormy youth and bitter middle age were succeeded under Sprigge by a serene rejuvenescence rather than by old age and its present high position is the direct result of his labours.

Sunday Times

Sir Squire Sprigge carried his years lightly There was about him an odd combination of the clubman and the country gentleman with something more than a dash of the man of letters

Morning Post

The medical profession has been deprived of a most valuable servant Sir Squire set a high standard for medical journalism and the 30 years since he has been in charge of *The Lancet* have seen many important advances in medicine made available promptly to the whole profession through its columns At the same time it has kept a sharp eye for spurious claims and false prophets

Yorkshire Post

Under his rule *The Lancet* has been strictly a journal about medicine for medical men Sprigge's view was that a technical treatment of problems eliminated the busybody and the quack Not that doctors were to be permitted the airs of a privileged caste Sprigge was always ready to laugh at what he called medical priest-craft

Truth

Very few men have achieved and maintained for so long an eminence such as his while at the same time remaining so universally respected and loved. His knowledge of science and literature was vast, his powers of correctly appraising situations and people exceptional his flair for matters of policy unrivalled but to those who knew him well these were not his most important qualities He will be remembered rather for a penetrating yet always kindly humour which made his companionship a delight to people of all ages for the perfect courtesy consideration and loyalty with which he treated those who worked with and under him for the understanding and encouragement which he invariably showed to young people, not least to those of his own profession for the qualities of steadfastness and integrity which bore fruit in the main task of his life—his journal and for a degree of personal modesty which made it possible for him to attain pre-eminence with and through the active work of others and at the same time never incur a single person's enmity

Medical Officer

Under his direction the world reputation of *The Lancet* was more than maintained and on international occasions Sir Squire was acclaimed by foreign colleagues as an outstanding figure in medical journalism He will be gratefully remembered by public health workers for his encouraging interest in preventive medicine He was quick to recognise contributions of value to the public health service and no sound movement in connexion with hygiene and health administration failed to secure his influential support.

Practitioner

He set a high standard for medical journalism and the ethical outlook of British medical journals was his constant concern He sought to improve the relations between the public and the medical profession by an insistence that medical etiquette existed essentially for the smoother performance of the healing art His life has been nobly spent in an important and essential part of professional organisation and he will be remembered with gratitude and affection.

Manchester Guardian

Sir Squire had long served the medical profession as a chronicler of its progress, an historian of its traditions and a diplomatist with perhaps a unique knowledge of the profession's relations with Government departments and with the other professions

For thirty years, during which the public aspect of medical work has altered even more than the map of Europe Squire Sprigge was responsible week by week for a chronicle of the changing face of medicine Such a chronicle reflects the chronicler, and in his charge *The Lancet* avoided aggressiveness and allowed facts to speak for them selves He was critical, fastidious, and urbane, but to the end of his life—and perhaps increasingly—he was liberal

He found it easy to get to know people, and he had a quick appreciation of their value and significance as well as of their foibles He could refuse requests either bluntly or gracefully, as circumstances required, but he preferred each man to have his say, and often took immense trouble in helping him to say it effectively Modest in his relations with contributors, he was also modest in controlling his office This meant that he allowed as much self expression as possible and said very little when accidents happened, but, though he freely delegated responsibility to his juniors, he had a disconcerting willingness to get on without them

The lessons of good government, as well as of diplomacy, could readily be learnt in his company, and his influence on his own profession was perhaps all the greater because it was inconspicuous His behaviour was civilising as well as civilised, and medicine, like many individuals, has gained much from his long life in its service

MEMORIAL SERVICE

At the memorial service, held on June 22nd at St Martin in the Fields, the Rev R J Northcott took the service, and Viscount Dawson of Penn, President of the Royal College of Physicians of London, gave the address published in *The Lancet* last week. Among those present were

Lady Sprigge (widow), Mr and Mrs Cecil Sprigge, Mrs Mark Napier, Miss Annabel Sprigge, Mrs J J Sprigge, Sir Edmund Spriggs, Miss Jones, Miss E C Jones, Commander and Mrs W Ross, Mrs E B C Lucas; Mrs Frank Sprigge, Mrs K. Sprigge, Mrs Kingsley Game, Mrs Jackson Miss Spriggs Mr J P B Ross, Mrs Hornby, Mrs O'Malley, Miss O'Malley Mr Napier Clavering

Mr R Percy Hodder Williams and Mr Ralph Hodder Williams (Proprietors of *The Lancet*), Dr Egbert Morland (Assistant Editor of *The Lancet*) and Mrs Morland, Mr F G H Holt (Manager of *The Lancet*), Mr and Mrs A Bennett, Mr D L Blackman, Mr F A Brooks Mr S C East, Dr T F Fox, Mr H Gasson, Miss Ellinor Grant, Dr M H Kettle, Miss G M Lomax, Mr F W Martin, Mr A T. Mayo, Mr W M Moody, Dr and Mrs D W Moynagh, Mr J A Norris, Mr E M Ryder, Miss F E Stilwell, Mr H Thompson, Mr L E Ward, Mr F W White

Sir Arthur MacNalty (representing the Minister of Health), Sir Laurence Brock (representing the Board of Control) Dr Alfred Cox (representing British Health Resorts Association), Mr J Crowlesmith (representing Messrs Hazell, Watson and Viney), Dr C M Fegen (representing the London and Counties Medical Protection Society), Mr Howard B Figgis (representing the trustees of Uppingham School), Mr Michael Fletcher (representing the *Practitioner*), Prof E J Garwood (representing the United University Club) Sir Charles Gordon Watson (Vice-president of the Royal College of Surgeons and representing the President) Lieut General Sir James Hartigan (Director General of Army Medical Services), Dr N G Horner (Editor of the *British Medical Journal*) the Rev Percy Maryon Wilson (representing the Magdalen College Mission) Mr H H Rew (representing the Conjoint Examining Board in England), Miss P Strachey and Miss K M Halpin (representing the London and National Society for Women's Service), Mr Bertram Sutton (representing the Medical Sickness Annuity and Life Assurance Society) Dr G de Bec Turtle (representing the Royal Society of Medicine), Mr Cecil P G Wakeley (Editor of the *Medical Press and Circular*) Dr Jane Walker (representing the Medical Women's Federation), Mr R F West (Managing Editor, the *Medical Press and Circular*), Sir William Willcox (representing the Society of Apothecaries), Dr C M. Wilson (Dean of St Mary's Hospital medical school)

Mr Johnston Abraham, Mrs E A Armstrong, Miss Armstrong, Mrs Harold Atkins, Mr Henry Baerlein, Mrs W Baldwin, Mr Harold Barwell, Mr C E A Bedwell, Mr H V Berry, Mr Digby Besant, Mr G B Besant, Major P E Besant, Mr Anthony Bevir, Mr Cecil Binney, Dr and Mrs C P Blacker, Dr J Blomfield, Dr R D Brinton, Mr F Gordon Brown, Mrs Francis Carbutt, Miss Carbutt, Mrs J Clifton, the Earl of Crawford and Balcarres, Sir Raymond Crawfurd, Mrs Harry Daniel, Mrs Darrah, Mrs H M Davies, Viscountess Dawson of Penn, Dr Vincent Dickinson, Mr and Mrs Dreyfus Sir James Dundas Grant Mr W McAdam Eccles, Mr Trystan Edwards, Mrs G S Elliston (also representing Captain G S Elliston, M P) Lady Emmott, Mr J Gardner, Mr David Gleed, Dr S R Gloyne, Miss I G Goddard, Mr F C Goodall, Dr N M Goodman, Mr Gavin Gordon, Mr E S Grew, Sir William Hale White Dr J P Hedley, Mr E B Hoare, Mrs F Holdship, Dr and Mrs E R Holiday, Dr Howard Humphris Mrs William Hunt, Mr and Mrs Wilfred Jackson, Dr G W B James, Commander R C Kinnear, Mrs Kinnell Dr C E Lakin, Lady Langdon Brown (representing Sir Walter Langdon Brown), Dr G F McCleary, Lady Chalmers Mitchell, Miss Montizambert, Mr K. Mulock Dr C S Myers, Mr T Nicholson, Dr Sidney Phillips, Mr W B E Ranken, Sir William and Lady Rothenstein Mrs H Bentinck Ryan Lieut Commander Malcolm Sanders, Captain E G Saunders, Mrs G Saunders, Miss Schooling, Mrs Baliol Scott, Sir Charles Sherrington, Dr Maxwell Simpson, Mr J Berthon Sparke, Dr Herbert Spencer, Mr Neville Stafford, Sir Thomas Stanton, Miss Stoney, Mr J H Tayler, Mr Ernest Thesiger Mrs M A Thompson, Mr George Thomson, Mr G H Thring, Monsieur R Truptil, Miss Gertrude M Tuckwell the Rev P Waddington, Mrs Geoffrey Whitworth, Mrs L L Whyte, Major A R Wood, Sir Almroth Wright

THE LANCET 100 YEARS AGO

July 1st, 1837, *p* 526

From an account of a case of pneumonia with cerebral symptoms in a child of 4 *years treated at the Hospital of Sick Children, Paris*

we cannot but reflect with pleasure on the rapid march which the science of medicine has made since medical men have begun to trace up symptoms to the organic derangements on which they depend, instead of contenting themselves as is still too frequently the case, with combatting symptoms as they occur, heedless altogether of the material lesion from which such symptoms arise The foregoing observations are peculiarly applicable to the diseases of children —Reflect, for an instant, on the cavalier manner in which diseases of children and of infants in particular are treated With some, worms form the primum mobile of more than two thirds of the affections of children others find it more convenient to lay everything to the account of dentition, a third class of practitioners somewhat more advanced than the former, imagine they have removed all difficulty by pronouncing the word 'fever"—How many affections of the head of the abdomen, and of the chest, are daily treated under the commodious denomination of "Infantile remittent fever'? Even our standard works on the diseases of children, commented and revised by men high in the profession and possessing vast practical knowledge, are, for the most part, disfigured, or rendered altogether unintelligible by dissertations on 'Inward fits," "Fainting," 'Nightmare, Tooth ache' 'Worms,' "Warts, and "Corns" The observations which we have just made might be easily extended, we select one of the numerous cases which we possess, as presenting an example of an organic disease, which in certain countries where medical men still affect to despise the assistance of auscultation and percussion would have been mistaken for 'fever with cerebral symptoms, —to use the language *à-la mode*

CORRESPONDENCE

THE REVISED MEDICAL CURRICULUM

To the Editor of THE LANCET

SIR,—Sir E Graham Little's letter in THE LANCET of June 26th presents several points which call for comment. In the first place it seems to be taken for granted that because the latest resolutions of the General Medical Council are somewhat more detailed than heretofore the period of medical study must therefore be lengthened. This is by no means necessary as a curriculum which fulfils the requirements of the new resolutions has been for many years the practice in Sheffield where 5½ years is the usual duration of the medical course. It seems to be a common error to suppose that because the G M C emphasise the teaching of dietetics therapeutics and prescribing physiotherapy principles of nursing child welfare psychology &c these must now each be taught by a lecturer or clinical teacher specially appointed for the task. Surely all of these have in the past been taught by intelligent clinical teachers in relation to their own particular cases it would be absurd in the education of students to remove each of these divisions of one subject from their natural clinical setting and attempt to deal with them as excuses for a new specialist department. Nor I imagine is this the intention of the G M C

Then the direction for training in preventive medicine is criticised as being nebulous and the opinion given that it will be ignored. Surely teachers in medical schools realise their responsibilities in this matter. Do they require the G M C to draw up detailed instructions and stand by with a big stick to see they are obeyed? It is much better that medical schools should lead instead of having to be driven by the G M C those which are so backward that they have to be driven are not likely to gain in reputation from the graduates they turn out.

Sir E Graham Little deplores the tendency to produce a general specialist instead of a general practitioner. So do we all but this again is a matter for the attention of individual schools in ensuring that they employ teachers with a wide outlook and do not magnify each branch of a subject into some specialty requiring a new department and full time staff who must justify their existence by demanding an undue proportion of the student's time. I think it is perhaps unfortunate that the G M C has found it necessary to attempt the direction of medical education by over-detailed instructions which are in danger of being interpreted too strictly in the letter rather than in the spirit in which I feel they were intended.

With regard to the alleged addition of nine months to the clinical course by making clinical instruction continuous it should be pointed out that students attending hospital in most if not all of the provincial schools do in fact carry on their clinical appointments during University vacations with perhaps a fortnight's holiday in the summer

Finally the statement that the medical profession is becoming practically closed except to those who have abundant financial means can easily be shown to be an exaggeration by investigation of the occupations of the parents of medical students, at least in provincial medical schools

I am Sir yours faithfully

G A CLARK

Dean of the Faculty of Medicine
University of Sheffield

June 28th

THE OVER TREATMENT OF GONORRHŒA

To the Editor of THE LANCET

SIR,—Dr Hanschell's letter in THE LANCET of June 26th appears to me to be written under a complete misapprehension. I was not attacking individuals as such but the principle of the segregation of venereal disease and the *methods of treatment*. A Member of Parliament may attack a colleague's principles in speech or print and yet retain his good will. Two lawyers may fight over a case in public and yet be the best of companions in private. Dr Hanschell is a guide philosopher and friend to thousands of sailormen all over the seven seas his disinterested work is well known to the profession and I hope he will believe me when I say that I was not conscious of discourtesy to any individual when I attacked the training and the outlook of the venereal specialist.

Several of your correspondents have given examples of ineptitude. I weighed in with another. Dr Hanschell now provides two excellent ones on the other side of the picture. All of us in fact have been giving way to the very human weakness of the *argumentum ad hominem* one of the pitfalls in formal logic. I repeat giving way for none of us really believes in the validity of arguing from the particular to the universal. Because for instance, a genito-urinary surgeon and a physician happened to be inept is no argument against a man who wishes to treat venereal disease being either a *first-class* physician or an expert urologist. I am sure Dr Hanschell does not mean to suggest this any more than I mean that because some venereal experts are inexpert all are tarred with the same brush. Of course not. I have lived long enough to be aware of the painful pleasure of correcting and being corrected by others as Dr Hanschell happily remarks. What troubles me is the increasing amount of over treatment I am continually noticing. And I may say I do not appear to be alone in this judging from the amount of confidential information that has been pouring in some from people who will not or dare not write themselves

I am appalled when I think of the amount of stricture and chronic prostatitis that is being prepared for the future by the chemical urethritis and the traumatic mangling of the present. And I hope Dr Hanschell will forgive me when I say that I think this is due to the service mind the mind that thinks in terms of courses of treatment and forgets it is treating an individual and not a *disease only*

I have been reminded by him of certain great men who were regimental medical officers. But had any of them got the service mind? I think not. John Hunter as the recent Portugal letters show was a thorn in the flesh to everyone over him. It was with the utmost difficulty he was dissuaded from fighting a duel with one of his superior officers. He must have been a perfect *nuisance*. Laveran was totally neglected by his service until he was discovered by the Italians. Ronald Ross and Peter Freyer I knew well. They both got out of the distinguished service to which they belonged as soon as they could and their vitriolic comments on their former colleagues were often more amusing than truthful. None of these people had service minds. If they had had they would never have been heard of

With Mr King's philosophic letter I find myself in considerable agreement. He admits that there is over treatment and explains it as due to a fear of under treatment But surely, surely, it is the patient one treats, not the disease

And he admits that ' there is at present small incentive for a mind with the necessary medical and surgical background " to make venereal disease his life work. That is just what I have been complaining about I think that young men taking up venereal disease are not having a fair-deal. They are not being properly trained , they are not being given a chance In gonorrhœa they are being told that their province stops at the verumontanum, Like Moses on Pisgah they may gaze at the entrance to the Promised Land (the trigone) but they may not pass therein They are told that their business is with one coccus only The ubiquitous *Bacillus coli* even is not for them. Can anything be more unscientific !

Mr King makes one good debating point when he states that the psychology of shame makes it convenient for one man to treat all the venereal diseases That is true, but often it is the herding together of patients in a clinic labelled " venereal " that makes that feeling acute People like myself at the Lock Hospital have had to struggle against this all our lives, but with two hundred years of history behind us we could not hope to alter this psychological disadvantage The general hospitals have no such special handicap They could have grasped the opportunity of treating these people in the open Most of them have failed to do so

Mr King and Dr Hanschell both mention the same point that it was the failure of the urologist to tackle gonorrhœa that made the V.D clinics necessary That is true , and to the urologist I should like to add the gynæcologist But urology is a department of surgery which has arrived in the lifetime of many still living It has been advancing rapidly all the time, and I am afraid it has rather neglected gonorrhœa At present there are not enough men with urological training to go round. When there are we may hope to see some scientific improvement in the treatment of this time immemorial disease

I am, Sir, yours faithfully,
J JOHNSTON ABRAHAM

Queen Anne street W , June 28th

PHYSICAL SIGNS ARE THEY WORTH WHILE ?

To the Editor of THE LANCET

SIR,—I was very pleased to read the report of Dr C E Lakin's Bolingbroke lecture to the South west London Medical Society in your issue of June 19th Dr Lakin said that owing to radioscopy the high value of physical signs was receding from the minds of medical students, and he instanced cases in chest affections where the physical signs were necessary to interpret the results of radioscopy Physical signs revealed the volume, density, expansibility, conductivity, and moisture in the lungs , the physical conditions were demonstrated. On the other hand " the interpretation of radiograms was often difficult and sometimes misleading "

In a letter contributed to your columns in 1903 (republished in my recent work on Asthma, &c) I said that in early phthisis the results yielded by the X rays are " very frequently unreliable, and at the best, are difficult of interpretation " Despite the improvement of radiological technique I still hold this opinion Radiography cannot show the impairment of elasticity at one apex recognisable by other means, nor can it differentiate between an active and an arrested lesion My letter referred also to the excursion of the diaphragm, which is more accurately determined by Litten's sign, by percussion and auscultatory resonance In conclusion I maintained that the results obtained by physical diagnosis are " earlier in point of time, alone trustworthy in respect of differentiation, and in any stage of the disease, free from the pitfalls of radioscopy " The remark of Dr Lakin is very arresting, when he says he wonders whether those who decry physical signs had ever got into the way of eliciting them

I am, Sir, yours faithfully,
Harley street W , June 24th A G AULD

CONTINUOUS VENOUS HUM IN CIRRHOSIS OF THE LIVER

To the Editor of THE LANCET

SIR,—Dr Bates's account of a continuous venous hum in a case of cirrhosis of the liver, published in your issue of May 8th, is of interest in view of a similar case I saw several years ago as house physician to Dr Drummond at Addington Hospital, Durban.

The patient was a policeman aged about 45 There was a history of abdominal distension, progressive weakness, and dyspnœa on exertion for several months He was not a heavy drinker He had suffered from malaria several years previously When first seen abdominal findings were slight, but within a month or two there were obvious signs of free fluid in the abdomen, and dilated veins were visible over the right hypochondrium axilla, and anterior chest wall He died shortly after a severe hæmatemesis Unfortunately a post mortem examination was not allowed The Wassermann reaction was negative

The murmur was present from the beginning It was loud, continuous, and roaring and was heard over the whole precordium, with maximum intensity immediately above the xiphisternum Deep inspiration or pressure with the finger on the xiphisternum abolished the murmur

I have since come across a reference to such venous murmurs by Gwyn (*Amer J med Sci* 1930, 180, 525 , quoted by A G Gibson, *Med Annu* 1932, p 311) Dissection in one of these cases showed that the murmur depended upon the fact that an emissary vein from the superior abdominal region entered a foramen in the sternum to reach the internal mammary vein Hence pressure put upon the foramen obliterated the murmur Gwyn presents two illustrations showing the situation of fissures in the sternum and points at which the murmurs were best heard in his two cases I am, Sir, yours faithfully,

Cape Town June 14th J MIRVISH

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 19TH, 1937

Notifications —The following cases of infectious disease were notified during the week Small pox, 0 , scarlet fever, 1549 , diphtheria, 1026 , enteric fever, 24 , pneumonia (primary or influenzal), 574 , puerperal fever, 39 , puerperal pyrexia, 125 , cerebrospinal fever, 18 , acute poliomyelitis, 12 , acute polio encephalitis, 4 , encephalitis lethargica, 4 , dysentery, 19 , ophthalmia neonatorum 139 No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 25th was 2908 which included Scarlet fever 729 diphtheria 830 measles 152 whooping cough 449 puerperal fever 13 mothers (plus 11 babies) encephalitis lethargica, 281 poliomyelitis 3 At St Margaret s Hospital there were 26 babies (plus 14 mothers) with ophthalmia neonatorum

Deaths —In 123 great towns including London, there was no death from small-pox, 1 (0) from enteric

(Continued at foot of opposite page)

PANEL AND CONTRACT PRACTICE

Change of Air

PRACTITIONERS often advise patients to go away from home to recuperate and sometimes insured persons act on this advice without previously obtaining the consent of their approved societies—with the result that payment of their sickness benefit may be held up The societies rules usually provide that members in receipt of benefit must not leave the locality in which they reside without first obtaining permission from the society and while it is no part of the practitioner's obligations to instruct insured persons in the rules of their societies a tactful reminder may well prevent misunderstanding and annoyance Permission is necessary whether the patient is being provided with an intermediate convalescent certificate or not If he has no such certificate it is well to remind the patient that in order to secure payment of benefit he must obtain weekly certificates from a local practitioner

Alternative Occupation

An approved society recently complained that an insurance practitioner had issued a final certificate to a patient and had endorsed thereon a recommendation that payment of disablement benefit should be continued for a limited period to permit of the insured person s seeking alternative employment—she was permanently incapable of resuming her normal work. In such cases the patient should not be certified as incapable of work unless in the certifying practitioner's opinion he is physically unable to perform any other suitable kind of remunerative work whether at once or after a short course of training When it is clear that an insured person has become permanently incapable of following his ordinary occupation it will be for his approved society to determine (subject to the member s right of appeal) for what period the payment of benefit should continue in order to allow the member reasonable time to qualify for some new form of occupation But again in order to avoid misunderstanding it is well to explain to the patient that after the issue of the final certificate the payment of further benefit is a matter for determination by the society

The Custody of Stationery

Warnings have been issued from time to time about the need to take care of National Health prescription and certificate forms A stolen prescription form may of course be used to obtain medicines through insurance chemists and though insured persons rarely have knowledge enough to write prescriptions that will secure the dispensing of medicines they might readily obtain for example cod liver oil and malt. With a certificate form it is not by any means difficult to forge what is in effect a blank cheque on the approved society s funds and special care should therefore be exercised to ensure that unused forms of certificate do not fall into the hands of unauthorised persons A case has just been heard at Hereford in which an insured person submitted certificates to his society covering a period of four weeks which enabled him improperly to obtain benefit The man admitted that he went to his doctor s surgery for treatment and while the practitioner was in another room he stole a book of panel certificates from the surgery desk. The society in due course referred the case to the regional medical officer but the insured person took care to resume work before the date fixed for the examination. The magistrates, having heard a plea for clemency, discharged the man under the Probation of Offenders Act but he has to repay to the society in weekly instalments the money which he improperly obtained.

The Drug Tariff

The Drug Tariff is to be altered in form as from July 1st 1937

Clause 4 (2) of the Terms of Service for Persons supplying Drugs and Appliances provides that a chemist shall supply with reasonable promptness such drugs and appliances as are ordered and shall so far as is practicable keep in stock for that purpose all those drugs and appliances mentioned in the Drug Tariff Clause 3 provides that all drugs and appliances so supplied which are included in the Drug Tariff shall be of a grade or quality not lower than the grade or quality specified therein.

At the present time the Drug Tariff is divided into five parts, Part II containing the scale of dispensing fees Part III a list of drugs and preparations and Part IV a list of appliances Hitherto it has been necessary for chemists to keep in stock for the purpose of insurance dispensing all the drugs and appliances mentioned in the Tariff, but the amendments will create a new section containing drugs and appliances which the chemist is not required to keep in stock but by including drugs and appliances by name in the Tariff a standard or quality is set up and prices are available which may be taken as indicating the quality it is expected will be used in dispensing medicines for insured persons.

The old Part III of the Tariff now becomes Part IIIA. The drugs and preparations listed in this part will be those which so far as practicable must be kept in stock The old Part IV now becomes Part IIIB and contains a list of appliances which similarly should be kept in stock. Two new sections named Part IVA and Part IVB will contain, respectively details of drugs and preparations and of appliances which chemists will not be required to keep in stock but must still of course be supplied with reasonable promptness Dispensing fees in respect of entries in these four parts are set out in Part II of the Tariff. Some 26 drugs and preparations are being transferred to Part IVA and the names of 132 drugs and preparations will be added to the Tariff and listed in Part IVA

Three preparations are being added to the list of what a chemist must keep in stock—namely pil. digitoxin tab phenobarbiton and tab phenobarbiton soluble Certain appliances too which chemists have hitherto had to keep in stock will now be listed in Part IVB and additions to the Tariff to be listed in this part are sphagnum moss spinal jackets and tampons. One much needed addition to the Drug Tariff is a standard quality for hypodermic needles and another useful addition to Part IIIB is a specification for a new wound dressing

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fever 11 (0) from measles, 0 (0) from scarlet fever 13 (3) from whooping-cough 35 (6) from diphtheria, 41 (10) from diarrhœa and enteritis under two years and 7 (1) from influenza The figures in parentheses are those for London itself

Four fatal cases of measles were again reported from Birmingham 3 from Newcastle-on Tyne The deaths from diphtheria were scattered over 27 great towns not more than 2 at any one of them Liverpool and Birmingham each had 4 deaths from diarrhœa

The number of stillbirths notified during the week was 310 (corresponding to a rate of 41 per 1000 total births) including 40 in London

PARLIAMENTARY INTELLIGENCE

GROUNDS FOR DIVORCE

In the House of Lords on June 24th the Marriage Bill, which has already passed through the House of Commons, was read a second time without a division

Lord ELTISLEY, in moving the second reading, said that as introduced in the Commons the Bill undoubtedly was a controversial and contentious measure and much time had to be devoted to it in Committee In the form in which the Bill now reached their Lordships, however, it represented a large measure of agreement between its promoters and those who were at first its most severe critics The Bill attempted not only to deal with individual cases of hardship and unhappiness, but above all it strove to maintain and preserve the great and valued institution of marriage It carried out most of the recommendations of the Royal Commission on Divorce and Matrimonial Causes of 1912, and it would bring our law more into line with the practice of the majority of civilised States

Viscount FITZALAN OF DERWENT said that he did not intend to move the rejection of the Bill on second reading, but many noble lords might find it advisable to support its rejection on the third reading

The Archbishop of CANTERBURY said that though he thought the Bill was certainly capable of amendment—and he hoped it would be amended—it had its real merits within the sphere of State law Taking the measure as it stood, he could not honestly as a member of the House vote against the second reading On the other hand, how could he resist the conclusion that he might be contributing to the gradual dissolution of the institution of marriage itself if, as the chief officer of the Church and therefore in a sense its representative, he were by a formal vote in that House to associate himself with the promotion of a Bill which, whatever merits it might have, contained proposals which were inconsistent with the specifically Christian principle of marriage? He could not take that responsibility Therefore, if there was a division, he must simply stand aside

Lord SNELL said he thought the Bill dealt with a great human, moral, and social problem, and it offered hope of a new life in the shape of a home and a family

Lord ATKIN said that speaking generally he approved of the progressive parts of the Bill and strongly opposed its reactionary parts He hoped the House would support the second reading and that the objectionable features would be removed in Committee

The Bishop of ST ALBANS said he believed the Bill would weaken instead of strengthen the institution of marriage lead to an increasing number of divorces, and quite obviously expose more children than were exposed to-day to the dangers and ill-consequences that came from broken-up homes

Lord ROCHE, speaking from his experience as a Judge, said that he regarded this as a necessary, beneficial, and on the whole wisely conceived Bill

The Bishop of DURHAM said that he thought the Bill if it were passed so far from bringing the law of England into conflict with the law of Christ would bring them into a deeper and truer harmony He supported the Bill because he believed that it would strengthen the hands of those who were seriously perturbed by the wave of licentiousness which had swept over the Western world in the wake of the Great War

Lord ALNESS said that the Royal Commission's majority report was entirely in favour of making insanity a ground of divorce since it differed from all other maladies in that it involved a complete break-up of the household.

The Marquess of READING also supported the Bill

The Archbishop of YORK said that while he believed it desirable that the Bill should pass into law, he did not think it appropriate that an occupant of the Bishops' Bench should vote for it

The debate was adjourned and was resumed on June 28th

The Bishop of BIRMINGHAM said he intended to vote for the second reading of the Bill He was in favour of the provision that insanity, on the conditions laid down, should be a ground of divorce

The Marquess of SALISBURY said he could not support the Bill The stability of the marriage law was vital from the point of view of the State and the Bill would cause unrest and with unrest came immorality

LORD DAWSON'S SPEECH

Viscount DAWSON OF PENN said that some of the previous speakers were disposed to attribute collusion and adultery to a weakening of the fabric of the normal sense, or even to licentiousness, but, he asked, is change always decadent? Are not the causes of our present troubles to be found in the changes in thought and in mind which have taken place in the course of the years Why should the idea of marriage alone be expected to remain static? Where the kernel of marriage has been lost the tendency of the present age is to throw away the husk—and could we say that it is wrong? Surely the cure is to adapt the law to the prevailing mind of the community Increase in divorce did not imply a corresponding increase in marriage failures because in former days more married people lived with their failures With the advent of freedom and equality had come to women an increase of sex consciousness, the woman expected a sex satisfied life just as she demanded equality of companionship For these reasons women did in fact contribute more to the failure of marriage than they did in past times Yet, said Lord Dawson, marriages which are successful to day reach a higher level of happiness than at any previous period Passing to the clauses of the Bill itself, Lord Dawson suggested that a minimum of five years married life was too long Except for the younger women it would be destructive of the possibility of a second marriage On the other hand, he regretted the absence from the Bill of any attempt to disentangle and remedy the causes of matrimonial disharmony in their early stages Medical men knew how many misfits of marriage might have been put straight with the help of a little knowledge and understanding He supported the granting of divorce for desertion and cruelty because both frustrated the purposes for which marriage exists The yielding to a chance physical temptation was as naught compared with the cold calculation of desertion or with the year-long cruelty which could convert a home into a chamber of torment He admitted the difficulties of making insanity a ground for divorce and offered his own contribution to the definition of insanity as a sufficient cause for divorce It should, he thought, be either a continuous period of five years or ("and I regard this as very important") whenever a recurrent form of mental disease has been established, and he pictured the dread of the wife whose husband is in and out of a mental hospital over a period of years Finally he asked that one small but important omission should be made good and homosexuality recognised as a cause for divorce, alike for men and for women He regretted the omission from the Bill of inveterate alcoholism and inveterate drug taking, drug addiction, although more subtle than alcoholism, could easily bring destruction to family life With these reservations he supported the Bill because it would in his judgment make more firm the institution of marriage and make life more honest, more just, and more in accordance with the facts of daily life

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In the House of Lords on June 28th the Methylated Spirits (Scotland) Bill was read the third time

HEALTH ADMINISTRATION IN SCOTLAND

On June 24th in the House of Commons a supply vote for the Department of Health for Scotland gave opportunity for a long debate on Scottish health problems

The Secretary of State's Review

Mr ELLIOT Secretary of State for Scotland said that no one in Scotland was completely satisfied with the position which the country occupied either actually or relatively They felt that there were a great number of improvements which could be made and would have to be made in their health services and in housing, and that in some respects Scotland compared unfavourably with the nation south of the Border There was no reason for despondency but every reason for action, which must be continually pressed forward if they were to make Scotland what they all desired it to be a twentieth century nation fit to take her place in the line with the other nations. They had to press their activities as far as government was concerned along the lines of inquiry administration and legislation Since the Committee last considered these Estimates there had been frequent inquiries and examples were those on rural housing and on public health services. The Maternity Services Act which was recently passed through Parliament and the vote for physical training had both involved a great deal of activity on the part of the Department. In the sphere of legislation which was still under consideration he would refer as an example to the National Health Insurance (Juvenile Contributors and Young Persons) Bill which was intended to close the gap between leaving school and entering into the medical benefit scheme a gap which had been adversely commented upon by many people

MATERNAL AND CHILD WELFARE

The rate of infantile mortality last year was 82 per 1000 births That was higher than the rates for the previous three years, but lower than the rates before 1933 That was a disappointing fact, but the Committee would be glad to know that the rate for the whole country for the first quarter of 1937 showed considerable improvement over the similar period in 1936 and the rate for the 16 large towns taken over the five months showed that that improvement had continued He drew attention to some figures which showed the health in Scotland had suffered In the influenza epidemic the notified cases in Scotland jumped from 48 000 in 1935–36 to 123 000 in 1936–37 Cases of whooping-cough which was very serious last year in Scotland jumped from 1144 in the first quarter of 1936 to 8417 in the first quarter of 1937 In spite of these epidemics the health of Scotland continued to improve taken generally and over a long period of time there had been a very great improvement The Government were by no means shelving the report of the Committee on Scottish Health Services They were taking action along some of the lines recommended by it but there were many more on which they would have to take action. The need for a new Sanitary Code and reorganisation of hospital services for an extended general practitioner service and for extended medical benefit to the dependents of insured persons were being dealt with

Perhaps the most important of the Committee's recommendations referred to the maternal and child welfare figures The Maternity Services (Scotland) Act 1937 came into force on May 16th He could give an assurance that there was no case under the Act in which a certified midwife would not be present during the whole time of labour and that in addition, a medical man would be notified at the onset of labour and would have to hold himself in readiness to attend the case They had done their best by subsequent administrative inquiry to meet a point of view strongly stressed by the House during the passage of the Act Maternal mortality was at present the lowest on record in Scotland It showed a saving of some 60 lives over the figures of the previous year

HOSPITALS

The reorganisation of hospitals under the local authorities was proceeding, although perhaps not quite as quickly as they would wish. Some of the large authorities had taken steps for comprehensive schemes under the Act of 1929 and many of them were already bringing their hospital services up to date A scheme for instance which would give Lanarkshire as a whole a new general hospital and a new maternity hospital as well as improved care of infectious diseases would be now well on its way; but unfortunately the large burghs did not see eye to eye and would not combine on a joint scheme with the county council. He did not attach blame to either side but it was desirable that the parties should thrash out their difficulties as soon as possible and get a scheme under way Provision was being made for a new municipal hospital at Greenock It was hoped that agreement would be reached by which the hospital would serve Port Glasgow as well but unfortunately Port Glasgow decided not to participate in the scheme on the ground that they would not have a share in the actual management of the institution Arrangements were being made in Dumfries and Galloway which he thought were going rather more smoothly than those he had mentioned There the local authorities were in negotiation with the voluntary hospitals as well, which was very desirable In the North some six local authorities had jointly agreed to maintain a consulting physician at the Northern Infirmary at Inverness That was a type of combination which the Committee would welcome very much. Four schemes adopted under Section 27 of the Local Government Act of 1929 covered 800 000 of the people of Scotland or one-sixth of its population the authorities in question being Edinburgh Dundee Aberdeen and Bute Schemes were under discussion for extensions of hospitals at Lerwick, Kirkwall and Stornoway In Lerwick, with Treasury approval, the Department of Health had promised the managers of the Gilbert Bain Hospital a grant of 80 per cent of the estimated cost of a new hospital, which was £45 000 In Kirkwall the Balfour Hospital trustees had submitted to the Department an application for a grant to enable them to extend the hospital at an estimated cost of £10 000 and the Department were giving that question sympathetic consideration At Stornoway plans had been submitted for the approval of an extension to the Lewis Hospital and the managers had been promised a grant of £14 000 from the Highlands and Islands Medical Fund or 80 per cent. of the estimated cost

NUTRITION AND THE CHILDREN

These particular schemes which the Committee had been considering were of course to be built on the broad foundation of the general health of the nation. They had to start with the mother and the newly born infant, and passing on they had to come to the school child, to the adolescent, and finally to the adult. As far as school-children were concerned one big constructive measure which had been in operation in addition to the medical inspection of school-children was the milk in schools scheme which was one of the big practical demonstrations of the Department's interest in nutrition. In certain areas the increase in numbers under the milk scheme had not been what they would wish and in certain counties and cities there had been a diminution It was odd to find that in the spring of 1936 in Lanarkshire 67 000 children were having milk in the schools, and that since then the figure had dropped to 35 000 He did not know what the reasons were for the decrease in the number of children taking milk. The decline showed itself in areas where a great quantity of milk was supplied free as well as in areas where half price was charged The position was not satisfactory and required further consideration, but they should not blind themselves to the fact that in Scotland, where a few years ago practically nobody was taking milk, there were now 294,000 school children getting a ration of milk every school day He was certain that this would show itself in an improvement in the health of the children in the schools, and particularly in their dental condition. The dental condition of the people of Scotland was bad, and that of the school children was unsatisfactory A supply of mineral salts in the best possible way must show itself in an improvement in the dentition of the child, and ultimately would save an expense which would fall on the local authority or on the individual when in later years his teeth went wrong and led to lasting conditions of ill health The Committee knew how much the people of Scotland were indebted to Prof Cathcart and Sir John Orr for their work Further surveys were being undertaken by these eminent experts, and the northern survey under Sir John Orr was being supplemented by assistance from the Carnegie Trust which would enable the survey to be more thoroughly carried out in Scotland than it had been in any other country He did not say it would relieve them from the necessity of action when the results came, indeed, it would make it all the more necessary

Mr HENDERSON STEWART Is the Secretary of State satisfied that the investigations will be of such a nature and character as to produce findings which he will be able to regard as final and authoritative?

Mr ELLIOT said he thought so The surveys were being carried out in the most careful way with the fullest possible coöperation by all the departments in the Scottish Office The fullest official assistance would be given to make the investigations authoritative and such as they could act upon In regard to nutrition, it was worth while remembering how far they had advanced in the health of the school children in Scotland As recently as 1901 there were 3700 deaths of school children between 5 and 14 Last year the figure was about 1500 In 1870 6000 children between 5 and 14 died, and at that period 40 per cent of the population of Scotland was rural as against 20 per cent at present That showed that mere fresh air was not sufficient to produce health There must be reasonable conditions of sanitation and nutrition as well The desirability of developing regional water schemes was being recognised more and more by Scottish local authorities There was a special problem in the Highlands and Islands and the Committee on Scottish Health Services had recommended a special grant for health services and water supply in those parts of the country

HOUSING

During the past seventeen years they had built about 250,000 houses, which meant that nearly 1,000,000 people in Scotland had obtained better housing accommodation But they had another 250,000 houses to build and they could not take seventeen years in building them They had in front of them the building of two cities the size of Edinburgh and another city of the size of Aberdeen That was a big task and they would have to bend themselves to it without any sort of party predilections At present instead of building a new city of Edinburgh with 100,000 houses every four years they were only building one every eight years, and that was not enough The local authorities were doing their utmost to apply the principles of town planning to the new areas which were being built, in some cases satisfactorily and in other cases he thought not so satisfactorily

The housing problem in the Special Areas had also been the subject of very careful consideration The Commissioner for Scotland proposed to convene a meeting of local authorities to consider the possibilities of a housing association on a non profit making basis for the Scottish Special Areas If the Commissioner got sufficient assurances of coöperation the association would direct its attention to experiments in alternative methods of construction and would, as far as possible, avoid competition with the authorities in the supply of labour and materials which it was difficult to get at the present time Apart from the existing State subsidies the Commissioner would provide the funds necessary, so that there would be no cost to the local authorities

Members' Criticisms

Mr T JOHNSTON said that infantile mortality was 30 per cent worse in Scotland than in England and Wales and in the chief infectious diseases the figures were 2½ times worse Sir John Orr had put it on record in the current issue of the National Farmers Union Year Book that "The next great social reform needed is a food policy to make a diet adequate for health available for every family This would constitute the greatest social reform of our age, and if it were done on sound lines, it would bring true prosperity to agriculture" The Mellanby experiments had proved beyond all doubt that the dental trouble affecting the population could be entirely eliminated The Advisory Committee on Nutrition of the Ministry of Health this year stated "There is no other single measure which would do more to improve the health, development and resistance to disease of the rising generation than a largely increased consumption of safe milk, especially by mothers, children and adolescents" They went on to expand that argument and said that they deplored the fact that there was a deficiency of milk in the diet of large sections of the population. He thought they had now all the reports that they needed, they knew all the facts and what the trouble was He would like the Government to explain how they could justify a state of affairs in Scotland in which alleged surplus milk was being supplied to butter factories at 4*d* a gallon while in the distressed areas nursing mothers and children had to pay 2*s* for it Under the scheme for supplying milk to schools every child between 5 and 14 during school life got milk at 1*s* a gallon, whereas in the case of children of four who were not at school 2*s* a gallon was charged for the milk. It would pay the farmers and pay the nation if a different policy were adopted, and it would certainly pay the public in improved health Let the medical officer of health in each district issue a certificate to every mother and child who wanted milk, as was now done in Ulster Those requiring milk could go to the milk shops and get get it on production of these certificates, thus saving distribution charges They could get the milk now at 1*s* a gallon in this way The proposal was perfectly feasible, and it would bring about the greatest revolution in public health that was immediately possible If the Government did this in the case of milk, there was no reason why they should not develop the same policy with regard to other necessary foodstuffs

Sir ARCHIBALD SINCLAIR said they had learned authoritatively last year from the report of the Committee on Scottish Health Services that the number of persons awaiting admission to the hospitals of Scotland exceeded the total number of beds available Progress was rather slow and he hoped that the Secretary of State would press on with this matter as far as he could

The question of an additional grant-in aid of the local authorities health services in the Highlands and Islands was an urgent one To place the whole responsibility for the present deplorable housing situation in Scotland on the shoulders of the present Government, he thought, would be manifestly unfair but they must bear a heavy share of responsibility The Department of Health in their report for 1936 pointed out that nearly one quarter of the working-class houses in Scotland were overcrowded, fully one third of all the houses in Scotland were without a separate water closet and a still greater number were without baths They said that overcrowding in Scotland was on the average about six times greater than in England The number of overcrowded houses belonging to local authorities was over 35,000, representing 22 7 of overcrowding It was the duty of the Government to spare no effort to wipe out this blot on the social conditions in Scotland

Mr KIRKWOOD said he had just come back from a cruise round the Western Isles and he had found that a great transformation had taken place there for the better particularly in the health of the children That was largely due to the medical services in the Highlands and Islands. The doctor in Stornoway had drawn his attention to the fact that the hospital accommodation was inadequate

Sir MURDOCH MACDONALD referring to the dental condition of children said that in Glasgow a request was made by the issue of 30 000 odd cards to parents for their opinion as to dental treatment for their children and it was most unfortunate to have to record that 20 per cent considered treatment to be unnecessary and that of the 20 per cent who promised to attend for private treatment a very large proportion in the following six months were found not to have carried out any treatment of any kind In the county of Inverness there was an examination for dental treatment but the distances were very great particularly in the Hebrides and it must be extremely difficult to give even the clinical advice which a dental specialist might give to the children and their parents as to what ought to be done He hoped that consideration would be given not only to the appointment of an inspector who would advise what ought to be done but also to the establishment of a clinic He could not agree with Mr Johnston that farmers ought to supply milk at a far cheaper rate than they did now If it was necessary to supply additional milk to children in order to prevent dental caries and other diseases of the teeth or to cure malnutrition then the Government must step in

Mr LEONARD said dental defects in children were one of the major problems of the school health services, yet there were only 51 full time dentists engaged in endeavouring to attend to this problem. There were 31 part time dentists but that only meant one person attending to 12 000 children In the opinion of qualified authorities on this subject there should be one dentist to every 5000 children The question of nursery schools was also urgent and must be developed quickly There were only 50 nursery-schools in Scotland attending to 1800 children of that number 30 were run by voluntary bodies. He would like to know whether anything had been done by the Department to bring to the notice of the competent authorities in Scotland the considered report on the need for the greater coördination and for a general advance in the treatment of tuberculosis.

Mr BOOTHBY said there was definite malnutrition among a section of the working-class population in Scotland It was a scandal that that should be so and he agreed with Mr Johnston that there was something wrong about a system under which 2s was charged to the working classes for milk while the manufacturer got milk at between 6d and 1s a gallon Every effort should be made to get milk as cheaply as possible for young children, especially before they went to school and for nursing mothers in the industrial areas of Scotland. He would rather the Government took over the stuff and distributed it itself in necessitous cases than allow the present conditions to continue There was a strong case for considering the possibility of getting other articles of food produced in Scotland to the working class more cheaply

Mr MACQUISTEN said the housing report showed a very bad state of affairs and it looked as if the local authorities had not the time or the capacity to manage these matters. They had certainly been very dilatory

Mr HENDERSON STEWART said he was prepared to assert that in every rural district in Scotland at least 50 per cent of the houses by every test of hygiene and public health were unfit for human habitation. He begged the Secretary of State to bend his great energy to this problem even for a little time As compared with the country folk the townspeople were getting more than their due share of attention

Mr ERSKINE HILL said the Government were to be congratulated upon what they had already done in the cause of nutrition There was far too large a proportion of deaths caused by bronchitis and pneumonia and afflictions of childhood affecting the limbs and so on which often led to death in the first year of life Instruction would be very helpful to enable parents to diagnose and start treatment earlier One had only to go to an orthopædic hospital to realise what could be done if the various crippling natural ailments of childhood in certain case were attended to at once He would point out the very rapid decrease in the mortality rate after the children had gone to school Between one and five years it was 7 6 per thousand; between five and nine 2 1 and between twelve and fourteen 1 4—a very remarkable fall One sentence in the report deserved the attention of the Committee:

The need for increased medical supervision of children between the ages of 1 and 5 is considerable

He also thought that medical supervision would be a very great help in the years following 15 particularly in the case of boys.

Mr PETHICK LAWRENCE drew attention to the unsatisfactory position of many persons who were seriously blind. He asked the Secretary of State to reinvestigate the standards of blindness and see that opportunity was given to persons who claimed that they were prevented by their infirmity from earning their own living to present their case If this was true such a standard should be made available that in all these cases they would be classified as blind persons

Sir R W SMITH said that he had been told that in the last few years the tendency of parents to feed their children on tinned food had become much more common. By education and otherwise they ought to emphasise the necessity of mothers feeding not only their children, but also their young people on fresh food In the report of the Department two medical inspectors of school-children said that malnutrition was not a question of want of food but of the unsuitability of the food provided In regard to Wigtown the medical officer said that too much starchy food and too much tinned food were one cause of malnutrition

Mr WESTWOOD said that the total vote which the Committee was being asked to pass for the health services of Scotland was £3 508,501 Were they getting the full benefit of this expenditure? This money should be directed towards the elimination or reduction of preventable disease They might spend money on hospitals, medical services and other health measures but much if not most of it was spent in remedying the defects resulting from ill nourished people living in unfit and overcrowded houses.

The Reply

Mr WEDDERBURN Under-Secretary of State for Scotland replying to the debate said as far as the Department of Health was concerned they had previously drawn the attention of local authorities to the need for providing the fullest supplies of milk in maternity and child welfare centres and they would probably be issuing before very long another memorandum dealing more comprehensively with this very important subject He could assure Mr Kirkwood that the hospital at Stornoway would not be delayed through the pressure of other building work. No one ought to underestimate the urgency of the rural housing problem but he hoped that there would not be any rivalry in this matter between town and country Until the passing of the Slum Clearance Act in 1930 only about 11 000 houses had been built for the purpose of replacing unfit dwellings After the Act was passed the proportion of slum clearance houses gradually increased and in the four years 1933 to 1936 inclusive no fewer than 43 000 houses had been built in Scotland for the purpose of slum clearance alone compared with about 10 000 houses before 1933 While they remembered how much remained to be done they should not underestimate the magnitude of that achievement It showed a far greater rate of progress than was ever contemplated before on the most pressing and urgent part of the problem Since then they had had the 1935 overcrowding Act which was intended to be the complement and not the substitute of the slum clearance programme that was already proceeding They had now more houses under construction than ever before He thought they could at least take comfort in this, that public opinion in Scotland was fully alive to the urgency of the matter and that they would be able with the coöperation and help of the building trade unions and building employers and local authorities to put an end to conditions which had been intolerable for a long time

NOTES ON CURRENT TOPICS

Local Government Superannuation Bill

On June 22nd the Local Government Superannuation Bill was considered by a Standing Committee of the House of Commons Colonel CLIFTON BROWN was in the chair

On Clause 5 (Power to admit employees of statutory undertakers), Captain ELLISTON moved an amendment enabling a local authority operating the Midwives Act, in arrangement with a voluntary organisation employing whole time midwives, to admit such midwives to the benefit of the authority's superannuation scheme by agreement in the same way as they could admit employees of statutory undertakings This was agreed to

On Clause 8 (Eligibility for superannuation allowance and scale of allowances), Sir T J O'CONNOR, Solicitor-General, moved an amendment providing that an employee of a local authority should be entitled by paying a prescribed sum to convert his non contributing service into contributing service for the purpose of securing an increased pension of such an amount between so many 120ths and so many 60ths as was appropriate to the payment made The amendment was agreed to

On Clause 12 (Reckoning of contributing and non-contributing service and service of persons indirectly employed), an amendment moved by Sir KINGSLEY WOOD was agreed to It provided that in the case of contributory employees who left the employment of a local authority to serve in the Great War the period in the forces should be taken into account as if it had been a period of service under the Act

On Clause 16 (Female nurses, midwives, and health visitors) Sir T J O'CONNOR moved an amendment to enable local authorities to grant compensatory allowances to nurses, midwives, and health visitors in their service as contributing employees if they had not completed 40 years' service on reaching the age of 60 This was agreed to

When consideration of the Bill was resumed on June 24th, Sir KINGSLEY WOOD moved a new subsection to Clause 26 (Modification or replacement of local Act superannuation schemes) It empowered the local Act authorities, to whom the clause applied, to include in the scheme which they had to submit under the clause a provision by which they could, if they wished, continue to require employees, or prospective employees, to pass a medical examination before coming into the superannuation scheme, in accordance with the statutory provisions governing the scheme or with their past practice This was agreed to

On the question that the second schedule stand part of the Bill, Captain ELLISTON appealed to the Minister to provide interchangeability between the federated superannuation scheme of the voluntary hospitals and the superannuation schemes under this present Bill He said that there was no doubt that such a provision would do a great deal to promote interchangeability of personnel between the voluntary and municipal hospitals and thereby enhance the quality of hospital work all over the country The matter was of special importance to nurses

Sir KINGSLEY WOOD said that there were, he regretted to say, almost insuperable difficulties of a financial and actuarial character in the way of any reciprocal arrangements between municipal superannuation schemes and those of non statutory bodies like the federated scheme referred to by Captain Elliston under which many nurses were at present insured for pensions Apart from this difficulty objection might be seriously urged to service in the employment of some body other than a local authority being made redeemable for pension and to the local authority which would become liable to pay the pension being thus made liable to pay for service rendered outside the local government service and under conditions which were not within the control of any local authority In view of those difficulties he was not able to proceed in the direction which Captain Elliston desired

The Factories Bill

THIRD READING IN THE COMMONS

On June 22nd the Factories Bill was read a third time in the House of Commons Sir SAMUEL HOARE, Home Secretary, who moved the third reading, said that the Bill brought within its scope 6,000,000 workers employed in 250,000 undertakings of all sizes and descriptions It dealt with the health, welfare, and safety of this great and diverse body of workers In particular it offered protection to women and youthful workers who particularly needed it The Bill set a minimum standard It did not impose an ideal, and he hoped that many employers would go beyond the standard which we were setting in it The Bill definitely raised the general standards all round and in certain respects made improvements that would prove of great importance in the future Recalling certain of the improvements made by the Bill, the right hon gentleman said that the provisions for the cleanliness of the workers and the cleanliness of the buildings were being greatly strengthened and extended. Overcrowding was being progressively reduced Fresh air must henceforth be circulated in every workroom For the first time in our factories legislation sufficient and suitable lighting must be secured and maintained This was an improvement of great importance Very important also was the new provision under which there was to be medical supervision of factory workers in case of industrial illness, and in particular where there might be risk of injury to the health of young persons As to the safety of workers, for the first time in our history, all new machinery must, when sold or hired, comply with certain safety requirements As regards old machinery, many improvements were being made for fencing it and ensuring proper precautions There was also the important provision that young persons were not to work dangerous machines unless they had been fully instructed as to the dangers, and unless they were sufficiently trained and adequately supervised Many new precautions were being taken against fire risks, such for instance as the provision which extended the need for means of escape to the smaller factories As to welfare, the Bill greatly widened the scope of former Acts and applied certain welfare provisions generally instead of restricting them to special factories and special classes of factories

The statutory hours for women and for young persons between 16 and 18 would be reduced from 60 to 48 a week and the hours of young persons between 14 and 16, subject to certain carefully guarded exemptions, would be reduced to 44 Moreover, in the case of women and young persons between 16 and 18 overtime would be greatly reduced Speaking generally, the maximum of 600 hours a year would be reduced to 100 hours a year Overtime in future would be restricted to certain weeks in the year and in order that it might be more effectively checked, it would be counted for the factory as a whole instead of for the individual, and for young persons between 14 and 16 there would be no overtime at all Women and young persons would henceforth be assured of their Saturday half holiday as their work would stop at 1 P.M. instead of 4 P.M. He believed that the Bill would come to be regarded in future as a great measure of social reform But great as were these individual improvements, the greatest advance in the future would be due to the concentration of public opinion upon these questions as a result of these discussions. He was struck by the series of interesting discussions which took place on the report stage and in particular those upon accidents and upon the employment of juveniles Great good had been done by the concentration of the attention of the House—and as a result the attention of the country—upon those very urgent questions. He wanted to see a much more alert public opinion upon both those questions From what little knowledge he had been able to gain about accidents, he thought one of the most urgent needs was that the public generally should pay more attention to them, should be less careless about them, and should take more reasonable precautions. He would like to see compulsory attendance at the Industrial Museum, not only of employers but of householders as well. He was very much struck on a visit to the museum the other day by the extent to which safety appliances had been developed and how cheap in price many of them were He drew the attention of employers, of householders, and of all ordinary citizens to this museum. He would like to see the public generally realise what is being done and how much more might be done if employers and householders made use of the facilities now at their disposal.

He assured members that when the Bill was passed it would be administered with the sympathy that the factory inspectorate had always shown in the discharge of its duties. It would be administered perhaps with even greater efficiency in the future for they would certainly have to extend substantially the number of the inspectors. It would be administered by the Home Office with the settled conviction that it was a great and useful measure that it contained within its four corners the seeds of growth and that the House desired it to be the instrument for generally raising the standard of the conditions in factories and workshops So far as administration was concerned the Home Office intended in the letter and the spirit to carry out the general wish of all sections of the House

AN INSTALMENT ONLY

Sir **FRANCIS FREMANTLE** after congratulating the Chancellor of the Exchequer the present Home Secretary and the Under-Secretary on the position which the House had reached in passing the third reading of the Bill, regretted that medical officers of health had so little part to play in this measure of health in the factories.

Some 25 years ago he had suggested that these matters should be taken out of the separate administration of the Home Office and combined in a single Ministry of Health. Since that time the whole fashion of politics had changed and almost a third of the work of that House was dedicated to the improvement of the individual conditions of the people Both sides of the House now joined together in supporting measures of this sort but although the degree of advance in this measure was considerable yet it did not come up to their desires. The improvement of the lighting of factories was an advance of great value as also the new washing facilities for all workers The need to secure greater coöperation between the local authorities and the factory inspectorate of the Home Office was partly met by the greater powers now given to district councils By working in conjunction with local education authorities, it would now be possible to obtain access to the children in the schools so that school inspection work would result in children being helped to find proper vocations in factories. But a proper liaison was still lacking He hoped that the change of name from certifying to examining surgeon would mean a change in practice and that more use would be made of those who have local knowledge of the children themselves. He wanted the inspection not simply to be an inspection of factories, but to bring home to individuals the desire of the inspectorate to help them adapt themselves to their work.

There was to be improvement in the hours of working but he would like to remove entirely the opportunity for overtime employment for women and young persons This consolidating and coördinating Bill should be looked upon as a means of further advance

Sir J **HASLAM** referred to the magnificent work behind the scenes of the certifying surgeons who had received little mention either in committee or in the House He hoped the Home Office would encourage them in the good work upon which they were engaged He wished that both employers and workers could see more of the Industrial Diseases Exhibition in Horseferry road, London. Could not the exhibition be moved to places like Manchester or Leeds where millions of workpeople would have an opportunity of seeing it?

On June 23rd the Bill was read a first time in the House of Lords and received a second reading on June 28th, when Viscount Samuel said he hoped that a system might be developed in which the thoughtful workman came to feel himself not a mere subject but a citizen in the world of industry

Exhibition of Animal Films

On June 23rd the Cinematograph Films (Animals) Bill was considered by a Standing Committee of the House of Commons. The object of the Bill is to prohibit the public exhibition of films in the production of which suffering is caused to animals or any films which depict the suffering of animals which is brought about by any means, either natural or artificial

Sir **ROBERT GOWER** moved an amendment providing that a cinematograph film should be deemed to be exhibited to the public when, and only when, it was exhibited in a place to which for the time being members of the general public as such had access. It was represented to him and to the other promoters of the Bill by members of the medical profession that to-day a number of films showing demonstrations on animals were taken and were used for the purpose of exhibition to medical and other university students. It was much better that use should be made of cinematograph films for this purpose than that the actual animals should be used for demonstrating The amendment was agreed to and the Bill passed through Committee

QUESTION TIME

WEDNESDAY JUNE 23RD

Physical Training in the Territorial Army

Mr **CARTLAND** asked the Secretary of State for War when he proposed to reconsider the decision of his department not to grant any assistance towards the encouragement of physical training in the Territorial Army —Sir **LAMBERT WARD** Treasurer of H.M Household, replied: The regular N C O s are required to train the Regular Army but Territorial Army Non Commissioned Officers are already allowed to train as physical training instructors and get extra pay for so acting Moreover physical training instruction counts towards the number of drills required The decision that assistance additional to the above cannot at present be given will be kept constantly under review

THURSDAY JUNE 24TH

Child Adoption

Mr **MATHERS** asked the Home Secretary when the report by the committee on child adoption might be expected and whether there was an early prospect of legislation making it possible for Scottish persons to adopt children domiciled in England and vice versa.—Sir

SAMUEL HOARE replied: I have just received the report of the Committee on Adoption Societies and Agencies and have given instructions for its presentation to Parliament. While the Adoption of Children Act, 1926, and the Adoption of Children (Scotland) Act, 1930, provide that an adoption order shall not be made in favour of any applicant who is not resident and domiciled in England or Wales or Scotland respectively, it is not necessary that the infant shall be so domiciled, and the question of legislation on this point, therefore, does not arise.

Air-raid Precautions

Mr DAVIDSON asked the Home Secretary the total number of gas mask distributive centres now established and the Home Office estimate of the number still required.—Mr LLOYD, Under Secretary, Home Office, replied: Four large regional supply depôts have been established with a total capacity of about 11,000 000 gas masks. Nine other similar depôts remain to be established. The scheme for distribution from these regional depôts is still under consideration and no centres for distribution purposes have yet been set up. No estimate can at present be given of the total number of such centres that will be required.

Diphtheria Prophylactic

Mr LEACH asked the Minister of Health whether he was aware that an Irish jury attributed a death from generalised tuberculous infection following prophylactic inoculation against diphtheria to the presence of tubercle germs in a bottle of prophylactic supplied by the English firm of chemists who supplied most of the diphtheria prophylactic used by public authorities in England and Wales; and whether he would have a searching inquiry made into this matter in view of the seriousness of the allegation made.—Mr BERNAYS, Parliamentary Secretary to the Ministry of Health, replied: I have seen a press report to the effect stated in the first part of the question. As to the second part, careful inquiry concerning the prophylactic supplied by the firm referred to has already been made by medical officers of my department and the result leads to the conclusion that no tubercle bacilli were present. As the matter is somewhat technical I will send the hon. Member further particulars.

Dartmoor Prisoner's Removal to Broadmoor

Mr PRITT asked the Home Secretary whether his attention had been drawn to the case of a prisoner at Dartmoor who had a crippled arm and was certified insane and removed to Broadmoor; whether that prisoner was still at Broadmoor; whether he was now sane, and, if not, from what form of insanity he was suffering; whether his insanity was brought about wholly or partly by his treatment in Dartmoor; whether his arm became crippled as a result of an attack upon him by a prison officer at Dartmoor; and whether any inquiry had been or would be held into the circumstances under which his arm was crippled.—Sir SAMUEL HOARE replied: I presume that the case referred to is that of a prisoner named A. H. Jackson who in April of last year sustained a deep cut on his right forearm from broken glass. The circumstances were fully investigated at the time by the Board of Visitors whose inquiry showed that there was no foundation for the suggestion that he had been attacked by a prison officer. The suggestion that the prisoner subsequently became insane owing to his treatment in prison is equally unfounded. His mental condition has improved, but he is still unfit to leave Broadmoor Asylum. He was suffering from delusional insanity.

MONDAY, JUNE 28TH

Milk in Special Areas

Mr JAMES GRIFFITHS asked the Minister of Agriculture whether, in view of the report of the Milk Marketing Board that under the provisions of their cheap milk scheme in the Rhondda the consumption of milk by those benefiting under the scheme increased by 43 per cent., he would take steps to extend the scheme to other areas in Wales.—Mr MORRISON replied: The schemes for the supply of cheap milk in the Special Areas have been inaugurated for experimental purposes by the Milk Marketing Board with the coöperation of local distributors and of the local authorities concerned, and with financial assistance from the Commissioner for the Special Areas. I understand that the Board are of opinion that fuller information as to the working of the present schemes is desirable before any question of further action along these lines could be considered.

Scarcity of Milk in Devon

Mr DREWE asked the Parliamentary Secretary to the Board of Education whether he was aware that there are 165 schools in Devonshire, with 3731 children, where no supply of fresh milk was available; that difficulty was being experienced in obtaining supplies owing to the low price that the producer received; and what action he proposed to take in this matter.—Mr KENNETH LINDSAY replied: It appears from the returns from the Devon schools showing the position on March 31st, 1937, that of the 514 public elementary school departments in the administrative county there were 113 departments, containing 4543 children, in which no fresh milk was provided. In 19 of these departments, containing 756 children, various forms of dried milk were provided. In about 87 of the 401 departments where fresh milk was available it was provided outside the milk in schools scheme at the ordinary retail price. I am aware that difficulty is being experienced in obtaining supplies of milk in this and certain other rural areas because the suppliers claim that the distribution allowance under the milk in schools scheme is insufficient. The future of this scheme is one of the questions which falls for consideration in connexion with long term milk policy, a matter to which the Government are giving close attention, and in this connexion the difficulty to which my hon. friend refers will not be overlooked.

TUESDAY, JUNE 29TH

Teaching of Dietetics in Schools

Mr HEPWORTH asked the Parliamentary Secretary to the Board of Education what steps were taken to teach practical dietetics in schools, with special reference to the value of body building foods.—Mr KENNETH LINDSAY replied: Cookery is a regular subject in the education of the older girls in public elementary schools; and the curriculum generally includes such instruction and training in the principles of proper dieting and their application as are suitable for girls at the age of 12–14 years. Some 90 per cent. of all the older girls attending the elementary schools, and rather more than 80 per cent. of the girls educated in secondary schools, are attending schools in which such instruction is provided.

Temporary State Employees and Superannuation

Mr LAWSON asked the Secretary to the Treasury whether, in view of the fact that the Government had in the Local Government Superannuation Bill now before the House, accepted the principle of conferring superannuation benefits on temporary whole time officers, the Government would apply the same principle to the Civil Service and other temporary State employees.—Col. COLVILLE, Financial Secretary to the Treasury, replied: The Bill in question applies only to a minority of employees of local authorities. In the interests of interchangeability and mobility of these staffs, the Bill is intended to secure, so far as this minority is concerned, the uniform application of contributory pension schemes by many hundreds of different authorities. This consideration prevents a distinction being drawn between temporary and permanent officers in the service of local authorities, but the inclusion of certain temporary officers on that account is no reason for modifying the State system, which is non contributory and differs in many other respects from the local government system.

NEW HOSPITAL AT LEICESTER.—It has now been decided to erect a new hospital here to deal with acute and general cases, and to convert the existing institution into a home for aged and chronic cases. It had formerly been intended to erect a hospital for chronic cases and add to the present general hospital.

HEALTH, HOSPITALS, AND THE STATE

SIR FARQUHAR BUZZARD'S ADDRESS *

THERE are few tasks in life so pleasant as that of distributing prizes without the responsibility of allotting them and without the expense of providing them It is a particularly gratifying experience to do so in one s own professional home for that is how I still look upon St. Thomas s even after ten years of exile

Napoleon—who knew something about conquests—said that the only conquests which were never regretted were those over ignorance and those of you who have received prizes to day may be sure that you will never regret the time and energy you have spent in attaining victory Whether the ignorance conquered was your own or that of the examiners is a question I must leave you to settle between yourselves. In any case I feel confident that there are no regrets on either side and that you prize winners are on the threshold of many more conquests over ignorance in the future.

It is customary on these occasions for the individual who occupies my position to distribute not only prizes but some words of wisdom, gained from long experience to those among his audience who are entering upon a career in medicine. I shall not attempt such folly partly because I have little liking for unsolicited advice myself but chiefly because I am convinced that the problems which confront one generation are often entirely different from those which confront the next.

On the other hand I might, without wasting too much of your time, refer briefly to the great changes which are taking place in the practice of medicine as they affect the individual practitioner the hospitals and the community at large The first question which naturally occurs to one is Why are great changes taking place ? There are many answers to that question but one is outstanding and predominant The enormous increments of knowledge in relation to health and disease, prevention and cure, during the last fifty years necessitate great increases in the expenditure of both time and money if those increments are to be used in the interests of humanity

In the last fifty years we have come to recognise the indisputable fact that the more a doctor knows of medicine the more time and money does he need in order to implement his knowledge and do justice to his patients In the same period of time we have all become more and more convinced that the preservation of health and the prevention of disease are gradually becoming more important than curative methods in the services which we can render to the community It is the recognition of these truths that is causing widespread changes The State has recognised them and has authorised local authorities to do something about it. The profession has come to the same conclusion and is constantly adding to the number of special branches of work open to its members It was inevitable perhaps that in the haste to meet new requirements and new developments there has been extravagance that there has been an attempt to impose on old methods of practice innumerable extra duties and responsibilities with little or no consideration given to economy of time or money

And now if I am not mistaken the time has come when the practice of the profession and of the hospitals have to be reviewed and perhaps revised when every effort must be made to coördinate activities, to effect economies, and to promote efficiency in the services which they give to the public. The day has passed when a medical man can work as an isolated individual It is true that he can often obtain the help he needs by hook or by crook by favour or by bribery but those are wasteful and thoroughly unsatisfactory methods He must be able to call for all he needs for his patients by right the right of an individual who belongs to an efficient organisation carried on for that very purpose

The generation to which I belong may be content to carry on as they have done in the past for a few more years. The new generation now entering the profession will not be so content They will demand their right to skilled help and expensive investigations and their demands must and will be met before the world is very much older There must be a large readjustment of the privileges, duties and responsibilities of all concerned in the medical service of the future.

But this is neither the time nor the place to discuss in detail the gigantic questions which have to be faced. May I say just a few words on the subject of great and old voluntary hospitals such as our own The treasurer will forgive me if any of my suggestions or prophecies appear to be too revolutionary or too impracticable The hospital must become a centre of a large health service and in doing so will necessarily extend very considerably its field of action and its executive powers within that field It must draw into the service which it provides large numbers of doctors in general practice and give them a real share in the activities of that service both in and outside the walls of the institution. I foresee I am anxious to see but I shall not live long enough to see, a great increase in your staff You will have to face determined opposition to every movement in that direction but that opposition will only come from those who fear competition and can be disregarded On the other hand you will have to give an increasing amount of financial help to half time members of your staff and if you cannot find the money to do this from your own funds you will have to invoke the help of local authorities

The chief enemy to efficient practice in medicine is the necessity of working against time and a doctor in a hurry is a menace to his patients Long experience of hospital practice convinces me that most institutions of the kind are understaffed and that doubling the number of the staff would promote increased efficiency A general adoption of this policy would do much to raise the general standard of practice in the community at large because each individual member of the profession who spends some part of his time working in a public institution where he is exposed to the criticism of his colleagues and of his students cannot fail to benefit by the experience

If I have any excuse for venturing to sketch in the field of hospital policy a field which is bristling with difficulties for those who are responsible for its fertility it is my fear lest the voluntary hospital system be imperilled by too close attachment to the great tradition of a great past and by a reluctance to cooperate with the State while there is the opportunity in building up a new organisation of medical services based on the central foundations of institutions such as ours.

After all the difficulties are there only to be surmounted and the greatest tradition is the capacity to progress with the times

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* Abridged from the address delivered at the distribution of prizes at St. Thomas's Hospital Medical School on June 0th

OBITUARY

JOHN RESTARICK ROLSTON, M R C S Eng , L R C P Edin

Mr Rolston, who died on June 16th in his eightieth year, had recently retired from practice as ophthalmic surgeon in Plymouth The son of John Rolston, M.D Edin , of Stoke, Devonport, he was educated at the Nelson House School and began his clinical study at the Royal Albert Hospital, going on to Guy's Hospital from which he qualified in 1879 He was clinical assistant at the Evelina Hospital for Children and then returned to Devonport as house surgeon and soon assistant surgeon to the Royal Albert Hospital. After a few years in general practice he preferred to limit his practice to ophthalmology and was appointed ophthalmic surgeon to the Royal Eye Infirmary at Plymouth and to the Prince of Wales's Hospital in Greenbank road, visiting also the Liskeard Hospital, the Plymouth Garrison, and the Royal Dockyard Asylum At this time he contributed clinical notes on interesting cases and technical improvements to the medical press Alongside his medical work he was interested in military training, serving in the old 2nd volunteer battalion, Devon regiment, with the rank of major commanding the Devonport detachment He married a daughter of Dr S E Comyn who survives him with their only son, Lieut Colonel A C Rolston, who commands the Devon and Cornwall fortress, R E

AUGUST WIMMER

Prof Wimmer, who died on May 20th, was born in 1872 in Denmark, where he spent most of his life when not studying psychiatry and neurology abroad. He was in charge of the Copenhagen municipal asylum of St Hans from 1912 to 1919, and was responsible for the great structural and administrative changes made in it in this period He was appointed professor of psychiatry in Copenhagen in 1920, and was put in charge of the psychiatric clinic of the Rigshospital in 1933 The subjects with which his name is often associated are paranoia, degeneracy in children, psychogenic mental disease, and psychiatric and neurological methods of examination In 1929 he published a well known work on chronic epidemic encephalitis, and a large text-book on psychiatry appeared in 1936 Many of his works were published in English, but France was his spiritual home His energy was as great as his constitution was seemingly frail, and he had accumulated an encyclopædic knowledge of the subjects connected with his work

MEDICAL NEWS

University of Oxford

At recent examinations the following candidates were successful —

M CH

M W C Oldfield

FINAL EXAMINATION FOR B M B CH

A. J M T Barnes R Billig, R G Blackledge W W Coppinger D I Crowther, A C Grey G F C Hawkins, M H Hughes, D Jefferiss, J Mason R B Niven A R Norton M A Partridge I F Rose J M Sherring A F Smith, T B Snell R H S Thompson B M Thornton, C B I Willey W Wynne Willson, A L Young, and W B Young

D O

C A. Buchanan, M M A Dubash V B Mankad, J D Maude Y K C Pandit M J Philip, E V W Pockley L R C Rose, and C A Stanley

In a congregation held on June 24th the degree of bachelor of medicine was conferred upon N H Martin

University of Cambridge

At recent examinations the following candidates were successful —

THIRD EXAMINATION FOR M.B B CHIR

Part I, Surgery, Midwifery and Gynæcology—F W O Adkins, G E Adkins, R F Ashwin T M Banham C F Barwell P F Barwood, R D D Birdwood, A W Box, E E Bullock J F H Bulman G A Burfield, O J Curl J K Denham R C S Dick H G Dowler, H L Ellis, T J Fairbank A L Fawdry N Feiwel A Garcés E A G Goldie A C F Green, J L Griffith, J E Hardwick-Smith S W G Hargrove N J P Hewlings, J H S Hopkins, R T Johnson J S Joly H S Kellett P Kelly A Leese, P F Malim R. W Mason J H Moir W E D Moore K S Mullard, W A. Nicholson, A P Norman W E Owens G R C Peatfield P A T Phibbs E H D Phillips C G Rob D Rubin G Sheers J F Stokes D C Sturdy V E A Sykes D J D Torrens R L Townsend, S C Truelove W B Waterfall P H Willcox J M G Wilson P R. Wilson, D E Yarrow and M D Young

Part II Physic Pathology and Pharmacology—C D Anderson R A Andrews R F Ashwin E F Aubert, J L W Ball T M Banham R C B Barbor P F Barwood M B Billington I G Braddon H A Brook J F H Bulman, C T A Burgess G M S Caldwell, L H Cane A C Clark N F Coghill J O Collin F S Cosh F M Crawshaw A C Cunliffe R C S Dick C M Dickins H G Dowler R Edwards, W H Ekin E A Evans F M Evans N Feiwel J N Fell C H C Ferguson G M Fleming E B French J C Gilson, C E D H Goodhart I C A D P Graham, I A Guest H Haigh S G Hamilton J N Horne W H R Jeremy J S Joly P Kidd A B Lintott T P H McKelvey R W Markham J H Moir B D Molesworth C R Morison W G Murray Browne T P Myles R C Nevill L B Paling A K Pardhy M T Parker E A Pask, C F Peaker, J P Reidy G O Richardson C G Scorer C J S Sergel K M M Sheldon J P Singer R M Solomon R S Stevens, A. W Stewart J F Stokes R F Tredgold W B Waterfall R W Watts D O Wharton, B D Whitworth E H L Wigram L A C Wood H R Wynne and G E Yardley

University of London

Sir Robert Pickard, F R S , director of the British Cotton Industry Research Association and a member of the Senate since 1926 has been elected vice-chancellor for the remainder of this year and for next year in place of Mr H L Eason, who is taking up his duties as principal on July 1st Prof J C Philip, F R S , has been appointed deputy vice chancellor for next year Sir Ernest Graham Little, M P , has been re-elected a member of the court of the University for a further term of five years from October, 1937

Dr A A Miles has been appointed to the university chair of bacteriology tenable at the University College Hospital medical school Since 1934 he has been university reader in bacteriology at the British Postgraduate Medical School

Dr Miles is 33 years of age He was elected to an exhibition in natural sciences at King s College Cambridge in 1921 and completed his medical education at St Bartholomew s Hospital He graduated M B in 1928 and held the appointments of house physician to the medical unit at the hospital and casualty physician in the out patient department In the following year he became M R C.P Lond and was appointed a demonstrator of bacteriology at the London School of Hygiene and Tropical Medicine In 1931 he became university demonstrator in the department of pathology at Cambridge and director of medical studies at Christ s College In 1934 he was given his present appointment and this year he was elected F R C P Dr Miles s published work is chiefly on the brucella group of organisms

Prof J H Dible, who has held the George Holt chair of pathology in the University of Liverpool since 1929, has been appointed to the university chair of pathology tenable at the British Postgraduate Medical School

Prof Dible is 47 years of age and graduated M B with honours in the University of Glasgow in 1912 After holding resident posts at the Western and Royal Infirmaries of Glasgow he became demonstrator of pathology in the University of Sheffield in 1913 During the war he served first as a regimental medical officer and later as a pathological specialist was in command of a mobile laboratory in France and Italy Prof Dible returned to take up a senior lectureship in pathology in the University of Manchester acting also as assistant pathologist to the Royal Infirmary in 1921 he was appointed to the newly created lectureship in bacteriology In 1926 he was made professor of pathology in the University of London, at the London (R F H) School of Medicine for Women, and three years later went to Cardiff as professor of pathology and bacteriology in the Welsh National School of Medicine In 1929 he received his present appointment and was elected F R.C P Lond Prof Dible is the author of "Recent Advances in Bacteriology" and the article on bowel streptococci in the Medical Research Council's "System of Bacteriology" His publications in general and special medical journals include articles on bacteriology morbid anatomy and experimental pathology

Prof L S Dudgeon has been appointed a representative of the general medical schools on the senate for the remainder of the period 1934–38

Society of Apothecaries of London

At recent examinations the following candidates were successful —

Surgery —W D Brinton University of Oxford and Guy's Hosp O D Gilmore, Westminster Hosp F H Holder University of Manchester and West London Hosp and R Robins Browne London Hosp

Medicine —J R. Audy, Guy's Hosp ; G R Hopper University of Liverpool ; and R Robins Browne London Hosp

Forensic Medicine —J R Audy Guy's Hosp and R Robins Browne, London Hosp

Midwifery —J B Alexander University of Cambridge and Westminster Hosp H M Hulse, Welsh National School of Medicine L de O Kite University of Glasgow H A N Passmore Charing Cross Hosp and G G Sahasrabuddhe University of Bombay and West London Hosp

The following candidates having completed the final examination have been granted the diploma of the society entitling them to practise medicine surgery and midwifery : J R Audy G R Hopper R Robins-Browne and G G Sahasrabuddhe

University of Glasgow

On June 25th the following degrees were conferred :—

M.D —E D Cooper (with honours) Samuel Lazarus (with high commendation) and Andrew Dick

Ph.D —Dawood Matta (in absentia)

M.B Ch.B —A M Thomson

University of Manchester

Mr Frederic Wood Jones F.R S professor of anatomy in the University of Melbourne has accepted an invitation to the chair of anatomy in succession to Prof J B S Stopford F R S who asked to be relieved of it in view of the increasing responsibilities of his administrative work as vice-chancellor Prof Wood Jones will take up his duties in January 1938.

Prof. Wood Jones graduated B.Sc. in the University of London in 1903 and M B., B.S in 1904 He became demonstrator in anatomy at the London and St. Thomas's Hospitals, and then lecturer in anatomy in the University of Manchester In 1910 he was made D.Sc Lond (in zoology), and was appointed to the chair of anatomy at the London (R.F.H) School of Medicine for Women He accepted in 1918 an invitation to the chair of anatomy at Adelaide, which he resigned on his appointment to the Rockefeller chair of physical anthropology in the University of Hawaii in 1927 He was elected F.R.S in 1925 and F R C S in 1930, when he left Hawaii to become professor of anatomy at Melbourne. Prof Wood Jones has delivered several Arris and Gale lectures to the Royal College of Surgeons of England and has done original work in anthropology and archæology His publications include books on corals arboreal man, the mammals of South Australia and sea birds as well as a number of papers on human and comparative anatomy

Survival of Animals at Low Atmospheric Pressures

The Soviet Union Year Book Press Service issues particulars of experiments lately carried out by the Central Laboratory of Aviation Medicine in which animals were subjected to varying atmospheric conditions At a pressure corresponding to altitudes of 5000 to 7000 metres carrier pigeons showed symptoms of altitude sickness with hiccup and vomiting Dogs cats, and rabbits died at altitudes of 10 000 to 12 000 metres while tortoises and guinea pigs could withstand an altitude of 13 000 metres Further experiments showed that no full-grown animal could survive at altitudes higher than this ; but quite unexpected results were obtained in tests on newly born mice and rats which were found to survive at an atmospheric pressure of less than one millimetre—corresponding to a height of 50 000 metres The animals apparently achieved this by a drop in the temperature of their bodies and it is stated that in some cases the temperature fell to 0 C The normal temperature of the human blood is about 38° C and at an altitude of 20 000 metres blood would boil at this temperature The fall in temperature of the young rats is regarded by Prof Streltsov as a protective reaction.

Royal Society of Tropical Medicine and Hygiene

The Chalmers gold medal of this society awarded for research in tropical medicine has been awarded to Dr R M Gordon, professor of tropical diseases of Africa in the University of Liverpool.

New Health Clinic at Glasgow

A new clinic in Florence-street Gorbals, was opened on June 16th It is the second of a series of large combined health centres to be erected by the Glasgow corporation The cost of the clinic was £30 000

Tuberculosis Conference in Paris

The Tuberculosis Association will meet in Paris from Oct 14th to 16th under the auspices of the French Ministry of Health Visits will be paid to the Hôpital Laennec the Dispensaire Léon Bourgeois the Institut Pasteur the open air school at Suresnes the offices of the Assurances Sociales and to the École de Puériculture There will also be a discussion on thoracic surgery Further information may be had from Dr Frederick Heaf hon secretary of the association Manson House 26 Portland place London W 1

Westminster Hospital

On June 24th the portrait of the late Sir John Wolfe Barry by Hubert Herkomer was hung in the board room of this hospital, to take its place among the other portraits of past physicians surgeons, and chairmen. Sir John was a vice president and chairman of the house committee from 1898 to 1918 and his second son the late Mr K. A. Wolfe Barry was chairman of the house committee from 1920 till his death last year

Mr Bernard Docker chairman of the hospital has invited several members of the rebuilding committee to join him in a visit to some of the Baltic countries where they will inspect various of the latest hospitals and hear about plans for those under construction. The party which will include Mr E Rock Carling senior surgeon and Mr C M Power secretary of the hospital will travel on Mr Docker's motor yacht and will go to Helsingfors, Tallinn Danzig Copenhagen and probably other cities

Medical Research Council

Mr W M Goodenough vice-chairman of Barclays Bank, has been appointed treasurer of the Council on the retirement of Lord Mildmay of Flete

The Council invite applications for a second series of post-graduate studentships and research fellowships in clinical science and experimental pathology which are intended to encourage young British medical graduates of special ability and original mind to become investigators in branches of medical science which are concerned directly with disease as it occurs in human beings This field of research includes investigations into disease or manifestations of disease in patients together with experimental work of an immediately relevant kind Six *post-graduate studentships* are offered for medical graduates who have already held house appointments and are strongly inclined to a career in clinical science or experimental pathology Each selected student will receive an inclusive grant at the rate of £200 per annum during a period not exceeding twelve months, for personal maintenance while undertaking approved courses of study in this country to advance his training in methods of research This study may include modern languages and advanced physiological pathological and special clinical work under recognised teachers but the course may not include studies of which the purpose is to enable the student to pass further examinations

The Council also offer *four research fellowships* for candidates of similar qualifications who have already had some experience in the use of research methods Each fellowship will be tenable for one year at the ordinary value of £250 per annum and will be renewable in approved instances at the rate of £300 per annum for a second year These fellowships are intended as probationary appointments for research in clinical science or experimental pathology under suitable direction in this country Research expenses may be provided in addition to stipend

Applications should be sent to the secretary of the Council 38, Old Queen-street London S W 1 before Oct 1st

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1 Wimpole-street W
TUESDAY, July 6th —5 P M Annual meeting of the Society

ROYAL MEDICO PSYCHOLOGICAL ASSOCIATION
WEDNESDAY, July 7th —2 P.M (County Buildings Ayr), Dr Douglas McRae Some Observations on the Care of the Insane (presidential address)
THURSDAY —10 A M, Dr A Meyer, Prof F L Golla Dr F A Pickworth and Dr A C P Campbell The Physiology and Pathology of the Cerebral Circulation
FRIDAY —10 A.M Dr W Mayer Gross Dr E Guttmann Dr A M Wyllie Dr F Krapf, and Dr I Mackenzie The Symptomatology of Vascular Diseases in the Psychoses and Mental Deficiency Noon Dr K Paddle The Prophylaxis of Dysentery in Mental Defectives

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

OXFORD OPHTHALMOLOGICAL CONGRESS
THURSDAY July 8th —10 A.M (Department of Human Anatomy, University Museum), Mr N Bishop Harman and Mr Arnold Sorsby Problem of Myopia Mr T Harrison Butler Lenticonus Posterior and Allied Anomalies at the Posterior Pole 2 30 P M, Group Capt W Guilfoyle Experiences of a Uniocular Pilot of Aircraft Wing-Comdr P C Livingston Debatable Ground in the Matter of the Monocular and Uniocular Pilot of Aircraft Mr Bernard Chavasse The Transconjunctival Approach to the Inferior Oblique
FRIDAY —10 A M Sir Walter Langdon Brown Hormones and Vitamins in Ophthalmology Dr Arthur J Bedell Photographs of the Fundus in Colour Dr R C J Meyer will read the late Dr David James Wood's Doyne lecture on Night blindness in Eye Disease—Suggestions and Speculations 2 30 P M Prof Joseph Imre Plastic Surgery of the Eyelids Dr Joseph Dallos The Individual Fitting of Contact Glasses Mr J W Tudor Thomas The Technique of Corneal Transplantation with Recent Modifications
SATURDAY —Dr Bernard Samuels The Histopathology of Papillœdema Mr E F King The Classification of the Ocular Melanomata Dr D V Giri A New Method of Advancement with a Single One-armed Suture

BRITISH POSTGRADUATE MEDICAL SCHOOL *Ducane road* W
WEDNESDAY, July 7th —Noon, clinical and pathological conference (medical) 3 P M, clinical and pathological conference (surgical)
THURSDAY —2 15 P M, Dr Duncan White Radiological Demonstration 3 P M, operative obstetrics
FRIDAY —3 P M clinical and pathological conference (obstetrics and gynæcology)
Daily 10 A.M to 4 P M medical clinics surgical clinics and operations obstetrical and gynæcological clinics and operations, refresher course for general practitioners

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole street, W
MONDAY July 5th, to SUNDAY July 11th —ST MARK'S HOSPITAL, City road E C All day course in proctology —MILLER GENERAL HOSPITAL Greenwich road, S E Sat and Sun, course in general medicine and surgery —Open only to members of the Fellowship

SOUTH WEST LONDON POST GRADUATE ASSOCIATION
WEDNESDAY July 7th —4 P M (St James Hospital Ouseley road S W), Dr W E Lloyd Nephritis

HOSPITAL FOR SICK CHILDREN, Great Ormond street, W C
THURSDAY July 8th —2 P M Dr Wilfrid Sheldon Some Defects and Deformities of the Bones 3 P M Mr A Simpson Smith Peritonitis
Out patient clinics daily at 10 A M and ward visits at 2 P.M

Appointments

BASTOW JOHN M D Melb, F R C S Eng has been appointed Hon Assistant to the Fracture Service at the Royal United Hospital, Bath

BROOK S G B Chir Camb Resident Medical Officer at the City of London Maternity Hospital

CLEGG J L M D Liverp D P H D P.M Deputy Medical Superintendent at the Worcestershire Mental Hospital Bromsgrove

COLTART W D M B Lond F R.C S Eng Hon Orthopædic Surgeon to the East Ham Memorial Hospital

GALBRAITH, A J M D Edin D P M Second Assistant Medical Officer at West Park Hospital (L C C)

HARRY NANSI F, M B Wales Junior Assistant in the Medical Unit of the Welsh National School of Medicine

KELLERMAN FRANZ M D Vienna L R C P Edin Junior Assistant in the Medical Unit of the Welsh National School of Medicine

LAW, BEATRIX B M D Oxon, D O, Second Hon Ophthalmic Surgeon to the Royal Infirmary Aberdeen

MELLER, H K, M B Camb, Assistant Resident Medical Officer at the City of London Maternity Hospital

MORLAND, A. J M D, M R C P, Hon. Assistant Physician to University College Hospital

ROBERTSON, HELEN J L M B St And, Senior Medical Officer to Out patient Department, Royal Manchester Children s Hospital, Pendlebury

STRAKER EDITH A, M B Lond, D P H, Assistant in Bacteriology in the Department of Pathology of the British Postgraduate Medical School

TOUGH J S, M B Edin Surgical Registrar to the Royal Infirmary, Aberdeen

WESSON A. S M D, M R C P F R C S Hon Physician in Charge of the Department of Physio therapy at University College Hospital

WILLIAMSON GEOFFREY M B Manch D P M, Assistant Medical Officer at the County Mental Hospital, Rainhill near Liverpool

Withington Hospital, Manchester —The following appointments are announced —
SNAITH L M Ch M Durh, F R C.S. Eng Resident Obstetrical Officer,
HERD J A M B Manch Resident Assistant Medical Officer (Grade 3) and
ABELSON, S G, M B Manch Resident Assistant Medical Officer (Grade 3)

Certifying Surgeons under the Factory and Workshop Acts Dr E CAY (Old Meldrum District Aberdeen), Dr H W W GOOD (Shanklin District Isle of Wight), Dr T GILCHRIST (Whitburn District West Lothian), and Dr H W WYKES (Quorn District, Leicester)

Births, Marriages, and Deaths

BIRTHS

BERKLEY —On June 23rd, at Leigh, near Tonbridge Kent, the wife of Dr E A R Berkley, of a son

COLE —On June 21st, in Edinburgh, to Dr Winifred Cole wife of Lieut -Colonel Brian Cole Jaipur, Rajputana—a daughter

DAVIES JONES —On June 25th at The Fielding Johnson Private Hospital, the wife of Dr Cyril Davies Jones of Leicester of a son

FAUX —On June 20th at Bolton the wife of F Reginald Faux, M B, Ch B of a son

FLOOD —On June 24th, at Bullingham Mansions, W, the wife of Dr Phillip Flood, of a daughter

GELDARD —On June 25th at Sheringham the wife of Dr Colin Geldard of a daughter

HILTON —On June 23rd, at Harley street to Dr Gwen Hilton, wife of Dr Reginald Hilton —a daughter

JAMES —On June 21st at Stoke Bishop, Bristol the wife of Dr John Angell James, of a daughter

MAGNUS —On June 24th at Devonshire place, W the wife of Dr H A Magnus of a son

NORTHFIELD —On June 25th, at Devonshire place W the wife of Mr D W C Northfield F R C S Eng of a daughter

STERN —On June 27th at Devonshire-place the wife of Mr David Stern, F R C S Eng, of Twickenham of a daughter

THOMAS —On June 19th at King s College Hospital the wife of Dr R Thomas of Ripon, Yorks of a daughter

MARRIAGES

HOLMES—CHAPMAN —On June 22nd, at St Mary the Virgin Monken Hadley, Stanley Willson Holmes M B, F R C S to Isabel Chapman S R.N

IRVING—O CONNOR —On June 23rd at St Mary Abbot's Church James Tutin Irving M D of the Rowett Institute Aberdeen to Janet May O Connor of New York City

MCELWEE—OCKLESTON —On June 19th, at Holy Trinity Church Trefnant Frederick Campbell McElwee, M B to Miss Dorothy Elizabeth Ockleston of Trefnant, Denbighshire

PRATT—SPITTA —On June 24th at St George s Hanover square W Ernest Perceval Pratt M D, to Diana Camilla Dacre only daughter of Dr and Mrs Harold Spitta of Mayfair W

VERE NICOLL—FROHOCK —On June 26th at St Lawrence Church, Surfleet Lincolnshire, John Alexander Vere Nicoll, M R C S to Margaret Mary Frohock elder daughter of Mr and Mrs E J Frohock of Surfleet

DEATHS

BISHOP —On June 22nd at Montagu Mews South, W Frederick Michael Bishop M R C S Eng

HINE —On June 26th at Harpenden Alfred Leonard Hine M R C S Eng L S A, aged 84

LAWSON WILLIAMS —On June 24th, at Eastbourne James Lawson Williams M D Edin aged 75

TENNANT —On June 23rd at Stamford Lincs John Tennant M D, F R.C.S Edin formerly of St Annes-on Sea and Belfast

THOMPSON —On June 22nd at Suva Fiji the result of an accident, Charles Henry Burton Thompson M R C S Eng, D P H St And D T.M Liverp, M O H and Port Health Officer Suva, son of the late Henry Thompson Surgeon of Hull

WATKIN —On June 20th at Plaistow E Paul Ieuan Watkin M.A Oxon M R C S Eng aged 59

WILSON —On June 25th at Cheadle Cheshire, Henry Wilson J P M R C S Eng in his 79th year

N.B —A fee of 7s 6d is charged for the insertion of Notices of Births, Marriages, and Deaths

NOTES, COMMENTS AND ABSTRACTS

THE DOCTOR IN POLITICS AND DIPLOMACY *

By Sir Arthur MacNalty K.C B M D F R C P

FELLOW OF UNIVERSITY COLLEGE, LONDON CHIEF MEDICAL OFFICER OF THE MINISTRY OF HEALTH

THE DOCTOR AS AMBASSADOR

Thackeray says of the physician He has to wear the inspiriting smile to breathe the gentle joke to console to whisper hope to administer remedy The successful practitioner has to cultivate the arts of diplomacy and not infrequently as representative of his sovereign he has extended his talents in this direction beyond the radius of the sickroom Several rulers of Russia requested from time to time the services of English physicians who acted also as unofficial envoys of the British Government Of these the most famous was Thomas Dimsdale M.D Aberdeen F.R.S who went to St Petersburg in 1768 at the request of the Empress Catherine His successful inoculation against small pox of the Empress, herself and of her son was rewarded with the rank of baron of the Empire Counsellor of State and physician to the Empress, besides a pension of £500 per annum and a present of £12 000

The first medical ambassador appears to have been Sir Thomas Elyot (?1490–1546) traditionally an M.D of Oxford although no evidence of this is extant He wrote a medical treatise, The Castel of Health (London 1534), a Latin English dictionary and The Boke named the Governor (1531) which has been termed the first treatise on ethics in English He was English ambassador to the court of the Emperor Charles V served on several foreign missions, and was knighted by Henry VIII being the first medical man (according to Dr S D Clippingdale) to be thus honoured.

In the seventeenth century an anatomist became an ambassador Sir John Finch (1626–82) was the son of the recorder of the City of London One of his brothers was Lord Chancellor and first Earl of Nottingham Finch graduated B.A. from Oxford in 1647 and with his lifelong friend, Sir Thomas Baines obtained his M.A at Cambridge in 1649 They both took their degree of M.D at Padua in 1657 and under the patronage of the Grand Duke Ferdinand II of Tuscany Finch became professor of anatomy at Pisa Later from 1665 to 1671 Finch was resident at Florence In 1674 he went out to Turkey as ambassador to the Ottoman Court In 1682 he returned to England broken hearted at the death of Baines Finch died in the same year and was buried in the same tomb as his friend in Christ's College Chapel Cambridge. Dr Archibald Malloch has written a most interesting memoir of Finch and Baines

A highly distinguished medical ambassador was Sir Charles Richard Vaughan (1774–1849)

He was the sixth son of Dr James Vaughan of Leicester and brother of Sir Henry Halford (who dropped the name of Vaughan) Sir John Vaughan Baron of the Exchequer and Peter Vaughan warden of Merton. Educated at Rugby and Merton College Oxford he graduated B.A in 1796 M.A. in 1798 and became a fellow of All Souls He attended lectures on medicine both in Edinburgh and London and took the degree of M.B Oxon in 1800 In the same year he was elected Radcliffe travelling fellow in the University of Oxford. He travelled—extensively and adventurously—in Europe and Asia. In 1808 on the outbreak of the insurrection in Spain against Napoleon he went to Spain and in 1809 published his Narrative of the Siege of Saragossa He conveyed to Sir John Moore the first intimation of the approach of an overwhelming force of the French Army which necessitated the famous retreat of the English to Corunna. During the Peninsular War he carried dispatches was secretary of legation at Madrid, and acted for a time as British Minister there In 1820 Vaughan was appointed secretary to the embassy in Paris and in 1823 was made minister plenipotentiary to Switzerland In 1825 he was appointed envoy-extraordinary and minister plenipotentiary to the United States He undertook long tours in that country during his period of office In 1833 he was created Grand Cross of the Guelphs of Hanover He left Washington in 1835 His service in the United States covered one of the most interesting periods in American history He was intimate with such men as Story and Clay and he had to watch such burning questions as that of the boundary with Canada the position of the South American Republics the slave trade and the tariff (Dictionary of National Biography, vol. lviii p 161) His last appointment was that of ambassador to Constantinople to replace Lord Ponsonby, but that nobleman expressing a desire to remain, Sir Charles did not go to Turkey In 1837 Vaughan was made a privy councillor The remainder of his life was spent in travel. He died in London in 1849

In 1920 a second member of the medical profession Sir Auckland Geddes was appointed His Britannic Majesty's ambassador at Washington and did eminent service there Formerly principal and professor of anatomy at McGill University Sir Auckland Geddes had been Minister of National Service 1917–19 President of the Local Government Board 1918 Minister in Charge of Reconstruction 1919 and President of the Board of Trade, 1919 In a farewell speech to the "Pilgrims he drew a striking comparison between his own career and that of his medical predecessor

I have a list of many other medical men who have gained distinction in diplomacy and administration. It is one long record of success. The medical men chosen to represent their Sovereign whether at foreign courts, or as administrators in the British possessions overseas proved worthy of their high office, and maintained the influence and dignity of the British Crown

MEDICAL POWERS BEHIND THE THRONE

Bacon in his essay Of Friendship observes that a high rate is set by great kings and monarchs on friendship not by weak and passionate princes only but by the wisest and most politic that ever reigned who have oftentimes joined to themselves some of their servants whom both themselves have called friends and allowed others likewise to call them in the same manner using the word which is received among private men

Among these friends of British monarchs are two physicians,* upright, selfless and able they both enjoyed the boundless confidence of their sovereigns and played a tactful part in instructing them in their constitutional responsibilities Their influence was wide and far reaching yet it was never used for their personal aggrandisement or advantage On the contrary it was always exercised for the good of the sovereign, the welfare of Great Britain and sound

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Part of the MacAlister lecture delivered on June 24th at the National Temperance Hospital, London.

government They never sought the limelight King George IV was less black than he has been painted by Thackeray and others The monarch who won the friendship of Sir Walter Scott, kept a set of Jane Austen's novels in each of his palaces, and was eager to hear all that could be said in favour of a reprieve for prisoners condemned to death, had some great qualities One proof of wisdom was the appointment of Sir William Knighton as his private secretary and privy purse

Sir WILLIAM KNIGHTON (1776–1836) was born in Devonshire After an apprenticeship to a surgeon uncle he studied medicine at Guy's Hospital and later at Edinburgh He collected medical degrees, for he was an M.D of St Andrews, of Aberdeen, of Lambeth, and of Göttingen. On coming to London he soon acquired a good practice in Hanover-square, chiefly as an accoucheur In 1809 he was domestic physician to the Marquis Wellesley, then ambassador at Madrid, who later obtained for Knighton the appointment of physician to the Prince Regent As executor of Sir John McMahon he came into possession of some papers relating to the Prince Regent's private affairs He placed them at once, without comment or condition, in the hands of the rightful owner From that hour may be dated his admission to royal favour, the Prince appointed Knighton to an important office in the Duchy of Cornwall, in 1813 created him a baronet, and, later, made him Grand Cross of the Guelphic Order On becoming private secretary and privy purse in 1822, Sir William relinquished practice In spite of years of extravagance, he gradually reduced George IV's finances to order, caused his debts to be steadily liquidated, and had an influence over the King which few of his ministers enjoyed. Neither were Knighton's political activities restricted to royal finance and home affairs The King frequently employed him on confidential missions abroad. He was sent to Paris in 1823 and in 1824 made three journeys in rapid succession to Paris, Spain, and Sardinia "At a moment's notice," he writes to his wife, "the King has again ordered me abroad. My situation involves very heavy penalties on me" These severe and toilsome journeys continued up to the year 1826

Sir William Knighton attended George IV night and day in his last illness He had a sincere attachment and esteem for his royal master Sir William himself died in 1836 Munk terms him unquestionably a man of excellent talents, but still more conspicuous for his fine sagacity and knowledge of the world He honestly fulfilled the duties of a very delicate position, was greedy neither of money nor honours, and kept aloof from all intrigue

History repeats itself and seven years later another physician occupied a similar position to that of Sir William Knighton at the British Court When King Leopold of Belgium heard of the precarious state of King William IV's health, he sent his trusted adviser, Baron Stockmar, to guide the young steps of his niece, Princess Victoria, in her approaching accession to the throne In doing this he could have rendered no greater service to Queen Victoria and the British nation

Baron CHRISTIAN FRIEDRICH STOCKMAR (1787–1863) came of a Swedish family and was the son of a magistrate at Coburg After medical study and war service as an army surgeon, he practised in Coburg When Prince Leopold married Princess Charlotte the daughter of George IV, he brought Stockmar with him as his personal physician Both the Prince and his wife soon grew to value 'Stocky," and when Princess Charlotte died, Leopold threw himself into Stockmar's arms with the cry 'Now I am quite desolate promise never to leave me" Stockmar was Leopold's private secretary, controller of the household, and political agent until the Prince became King of the Belgians in 1831 He took a prominent part in the successive negotiations with regard to the Prince's candidature for the thrones of Greece and Belgium and secured the guarantee of Belgian neutrality by the Great Powers For fifteen months after Queen Victoria's accession Stockmar held an unofficial position as her chief adviser He lived at Court and had frequent interviews with the Queen and her ministers, his supposed German influence was somewhat resented by the public, although, as in Belgium, he always endeavoured to efface himself In 1838 he accompanied Prince Albert on a tour in Italy in order to satisfy himself that the Prince would be a worthy consort for Queen Victoria In this position he won the confidence and esteem of the Prince, who after he had become Prince Consort perpetually consulted him on behalf of the Queen on affairs of state The advice given was always frank, ripe with experience, and dictated by the highest motives Lord Palmerston admitted that Stockmar was the most disinterested man he ever met

Stockmar's political ideals were the unity of Germany under Prussia and close relations between Germany and England For these aims he worked zealously The rest of Stockmar's life was divided between England and the Continent He was ambassador of Coburg to the German Parliament in 1848 and died at Coburg in 1863 "Dyspeptic by constitution and melancholic by temperament," Baron Stockmar lived a life removed as far as possible from the public gaze His political knowledge was immense, his influence in high affairs unbounded Like his medical work his statecraft was based on sound principles and made for good

MEDICAL PRIME MINISTERS

We have now reached the apotheosis of the medical politician, the stage at which the government of a country is entrusted to his able hands Medical prime ministers have presided over the destinies of Denmark, France, Canada, and South Africa Let us see how they arrived at and acquitted themselves in these responsible positions

In October, 1766, a girl of fifteen—she was little more than a child—sat sobbing in a State coach, lumbering on the road to Harwich, for the England which she was never to see again The flags waved, the people huzzaed, and the bells rang for the Princess Caroline Matilda, sister of King George III She smiled bravely at the crowd through her tears and tried to console herself with the thought of her royal husband, for she had just been married by proxy to Christian VII, King of Denmark and Norway On arriving at Copenhagen sad disillusionment awaited her Christian was hardly in his right mind, a mental and a moral degenerate The country was ruled by Count von Rantzau Ascheberg and Count von Holck, the King's favourite Queen Caroline made the best of her hard fate and in 1768 gave birth to an heir to the throne (afterwards Frederick VI) From May, 1768, to January, 1769, the King was sent on a foreign tour to England, France, Holland, and Germany in the hope that new scenes might arouse in him a sense of his responsibilities He was accompanied by von Holck, and his suite included Dr Johann Friedrich Struensee, as personal physician on von Rantzau's nomination

STRUENSEE (1737–72) was of German extraction and was born at Halle where his father, Adam Struensee, a theologian of repute, was pastor He graduated M D at Halle in 1756 and practised at Altona to which place his father had removed. He early imbibed the doctrines of Voltaire and Rousseau, and was an able and skilful physician In the course of the royal tour he acquired great influence over the weak mind of the King and returned in a position of high authority The queen at first disliked Struensee but after he had cured her of an illness and had successfully inoculated the infant prince for small pox, she became greatly attached to him as her one friend in a hostile Court. In 1770 Count Struensee (as he now was) got himself appointed Master of Requests and having superseded the Council of State became virtually dictator of Denmark. A competent administrator he placed the control of the finances in the hands of his able brother, Charles Augustus Struensee and immediately set about curbing the power of the nobles and introducing democratic reforms The fatal mistake of Struensee was that he was in too much of a hurry He suddenly introduced measures which had all the effect of a revolution before he had consolidated his own position They included the enfranchisement of the peasants complete religious toleration the abolition of commercial restrictions the reorganisation of the army and examinations for public offices and were received with consternation. Fortified by this state of public feeling the Queen Dowager persuaded Christian VII that Struensee was intriguing with the queen and that they were plotting to assassinate him. Struensee and his friend Count Brandt were arrested at dead of night brought to trial and both beheaded and quartered on April 28th 1772 Through the exertions of the British Minister the unfortunate Queen Caroline was sent to Celle in Hanover where she died suddenly in 1775

We pass from the meteoric career of Struensee to the steady star of Clemenceau, sometimes clouded and at times apparently eclipsed but burning all the while with a fierce glow of patriotism and devotion to France

GEORGES CLEMENCEAU (1841–1929) was born at Vendée. For three hundred years his forbears had been doctors so in accordance with the family tradition he studied medicine at Nantes and at the University of Paris where he took his medical degree After a *brief* exile in America where he married, in 1869 he settled at Montmartre. We know little of his medical activities for hardly had he begun to practise when politics claimed him The Franco-Prussian war broke out the Empire crashed to its fall after Sedan and out of its ruins sprang the Third Republic with Paris in a state of seige Clemenceau was nominated mayor of Montmartre and in 1871 elected to the National Assembly where he voted against the peace preliminaries After the Commune he lost his seat but served from 1871–76 as a member of the Paris municipal council. From 1876–93 he was a member of the Chamber of Deputies His life during these years resembles to some extent that of Marat. He led the extreme Left in the Chamber; he had a newspaper *La Justice* in which he wrote articles whose invective and wit were only equalled by his mordant eloquence The Tiger as he was called threw the fierce searchlight of political criticism on to the government of the day He made and destroyed Ministries at his pleasure and according to his beliefs, all the while refusing to take office himself Stern and incorruptible he was a Roman father of the young Republic and his political integrity however much disliked, was never doubted.

After 1887 mainly owing to his hostility to the Russian alliance his influence waned and in 1893 he was not re-elected. He continued to wield the pen in his various papers with vigour as a journalist and supported Zola in the Dreyfus case. In 1902 he was elected senator for the Var and four years later was prevailed on for the first time to take office becoming Minister of the Interior in the Sarrien cabinet and when that Ministry fell in the same year (1906) he became Prime Minister of France His Government lasted until July 1909 and during that time he cemented the entente with Great Britain By then he had broken with the Socialist Party Clemenceau and Raymond Poincaré were antipathetic and The Tiger endeavoured to prevent Poincaré's election as President of the Republic in 1913 Foiled in this attempt Clemenceau assailed Poincaré's policy in his journal *L'Homme Libre* until patriotism forced him to support the Three Years Military Bill He continually warned his fellow countrymen of the German military preparations In the first years of the Great War he fought government after government for lukewarmness in the conduct of the war served on senatorial war committees and heartened the nation by his uncompromising attitude His writings and his words expressed the spirit of the French people and it became inevitable in November 1917 that he should lead the Government once more His victory cabinet save for himself was composed almost entirely of untried men and in it the Prime Minister took the portfolio of Minister of War At the age of 76 the Grand Old Man of France had come into his own Destiny had halted long on the way but the goal was reached.

Clemenceau's triumphs are too recent to be recorded in detail here He secured the unity of command by the Allies made Foch a Marshal of France and presided over the Peace Conference at which he was the chief delegate Wounded by an anarchist in 1919 who attempted to assassinate him, the brave old man exclaimed: It is nothing In those years he ruled France and it was not altogether out of self sufficiency but members of the Senate and the Chamber resented their exclusion from a share in the Peace Treaty and Clemenceau did not become President of France He bore the disappointment philosophically travelled in Egypt and India and in 1921 received a D.C.L. from Oxford In the following year at the age of 81 he made a triumphant progress in the United States His declining years were spent at La Tranche near Ste. Hermine in Vendée writing two books, one on philosophy and one on Demosthenes. It has aptly been said of Clemenceau that Like Foch he fired the soul of France and steeled her will

The next medical prime minister to be mentioned is Sir CHARLES TUPPER (1821–1915) who guided the destinies of Canada with wisdom and success and did much to bring about the federation of the Canadian provinces. He was the son of a Baptist minister of Nova Scotia and studied at Edinburgh where he graduated in medicine in 1843

The career of the fourth medical prime minister reads like a romance it is full of incident and adventure

Sir LEANDER STARR JAMESON (1853–1917) was born at Edinburgh, studied medicine at University College Hospital London and took the degree of M.D Lond. in 1877 He became resident medical officer at his hospital and might have anticipated a successful career as a London consultant if his health had not broken down. Sir Victor Horsley once told me that Jameson in those early days was somewhat reserved and aloof, but that all the residents in the hospital valued his advice He worked and read assiduously and his only relaxation was whist in the evenings. In later years this led on to bridge which proved a link of friendship between him and his former foe General Botha On grounds of health South Africa was advised and Jameson began practice at Kimberley in 1878 Cecil Rhodes then engaged in Empire building soon realised that in Dr Jim he had found not only a skilled physician but the able administrator for whom he had been seeking Jameson's treatment of Lobengula's gout won from that dusky monarch large concessions for the British South Africa Company and the doctor was soon busily engaged in pioneer work on behalf of the Company In 1891 he became administrator of Rhodesia. In 1895 during the troubles at Johannesburg between the Uitlanders and the Boer Government Jameson by orders of Rhodes stood waiting with five hundred troopers on the Transvaal frontier ready to support an anticipated rising of the

Uitlanders The revolt was postponed, but Jameson, impatient of delay, invaded the Transvaal with his little force on Dec 29th It was a hopeless attempt At Krugersdorp they were overpowered by the Boers, and after a desperate fight compelled to surrender on Jan 2nd, 1896 Jameson was handed over to the British authorities, tried in July with his chief associates in London and sentenced to fifteen months' imprisonment On grounds of health he was released in December Here was failure which to most men would have spelled the end of a political career Rudyard Kipling's poem, "If," chants the epic of Jameson's resolute soul He saw the things he gave his life to broken and stooped to rebuild them At the beginning of the Boer War Jameson was in Ladysmith and nearly died of enteric fever during the siege In 1900 he was elected to the Cape Legislative Assembly and from 1904 to 1908 was Prime Minister of Cape Colony He was made a baronet in 1911 and retired from politics in 1912 His last years were spent on war committees in London He rests beside his friend, Cecil Rhodes, in the Matoppo Hills

Mr GODFREY MARTIN HUGGINS, the present Prime Minister of Southern Rhodesia, is a fellow of the Royal College of Surgeons

A MEDICAL PRESIDENT

The man who overthrew the Manchu régime and was known as the "Father of the Chinese Republic" held a medical qualification in addition to those attributes of personality, energy, and intrigue which made him the stormy petrel of celestial politics

SUN YAT SEN (1867–1925) or Sun Wen was the son of a Christian farmer of Hsiang Shan and himself embraced the Christian faith. In 1894 he became the first graduate of the new medical school in Hong Kong One of his teachers and friends there was Sir James Cantlie Dr Sun soon deserted medicine for politics The years from 1895 to 1911 were filled with his active organisation of revolutionary secret societies throughout China, frequent abortive plots against the Manchu dynasty, and the dissemination of socialistic and democratic principles among his fellow countrymen. For the most part Dr Sun lived in exile in the United States, Japan, or England and conducted his activities by means of his agents The price of £100,000 was set on his head by the Chinese Government and in 1896 when in London he was kidnapped and kept prisoner for several days at the Chinese Legation The whole affair involved doctors Sir Halliday Macartney, M D, was Secretary of Legation at the time, Sun Yat Sen, the victim, was a doctor, and a doctor, Sir James Cantlie, secured his old pupil's release by personally approaching Lord Salisbury Dr Sun had succeeded in getting a note smuggled out of the Legation to Sir James

In 1911 the Chinese Revolution occurred and Dr Sun was called by the National Convention to be President of the new Republic on Jan. 5th, 1912 For the sake of unity he resigned shortly afterwards in favour of a more popular candidate, Yuan Shih K'ai, and became Director-General of Transport and Trade In 1917 after Yuan's death he led the movement for an independent republic of South China Of this he became an intermittent President, according to whether he coöperated or was at variance with the military leaders He died of cancer of the liver in 1925 at Peking where he had been called to a national conference

Sun Yat Sen's mercurial energy, patriotism, and zeal for reform shattered an age-long empire, which he attempted to replace by a new constitution, founded on Western democratic principles His gifts of administration and constructive statesmanship were inferior to his talents for overthrowing an effete government He was idolised by the mass of his fellow countrymen who recognised his sincerity and that the aims of his life were directed towards the amelioration and improvement of their lot

CONCLUSION

In a civilised and enlightened country the actual power of the State resides in the great body of the people The administration of a government can never be either safe or happy unless it be conformable to the wishes of that great body It follows therefore that the legislature of such a country is most representative when it is drawn from different callings as well as from different grades of society

Many examples are found of successful statesmen who have succeeded in other walks of life before they took up politics The professional politician who begins his apprenticeship to affairs on attaining his majority is becoming rarer, whilst the successful lawyer or merchant is more often encountered applying the lessons which he has learned in other spheres of activity to the business of the State Members of the medical profession have played no small part in administration and government and have owed their success in no small degree to their previous medical training

Dr John Brown, physician and man of letters, recognised this quality in his essay, "Our Gideon Grays," which treats of the rural general practitioners of Scotland, in his day, "the best educated, the most useful, the most enlightened, as they certainly are the worst paid and hardest worked country doctors in Christendom" He wrote "Were this a fitting place, we could relate many instances of this sagacity, decision, and tact, as shown by men never known beyond their own country side, which, if displayed in more public life, would have made their possessors take their place among our public great men"

In the galaxy of medical constellations adorning the political firmament not a few owed their rise directly to recognition in their professional capacity of these qualities mentioned by Dr John Brown In others the influence of a previous medical training is less marked Sir Charles Vaughan, for instance, never practised and Clemenceau rose to power through his gifts of oratory and literary expression rather than by his knowledge of medicine For the most part these men have carried into politics the high ideals of the Hippocratic calling The majority have not only been great, but, also, good men We may differ from their politics, we may deplore a catastrophic error of judgment, as in the case of Jameson's raid, but we can recognise that, as a rule, they were actuated by a desire to serve mankind and to promote the well being of the country in which they held responsibilities

To-day in this country the doctor is playing an important and progressive part in the national life He need not necessarily go into politics to do this because the politicians come to him for advice and counsel. It has been realised to use a proverbial saying, coined by Sir Benjamin Ward Richardson, that national health is national wealth and whatever government is in power it studies through the Ministry of Health to apply the wisdom, experience, and discoveries of medical science to the welfare of the community The Medical Research Council is a government department under the Privy Council. A special kind of medical administrator has arrived, the medical officer of health, who guards the health of the persons in his area and advises his council on appropriate measures for securing it The leaders of the medical profession are frequently consulted on desirable health reforms The Health Committee of the League of Nations has done much to improve health conditions abroad and to make medical knowledge and experience international In all these ways the doctor exercises an influence on political thought and legislative action

In conclusion therefore it can be said that the professional advice of the doctor in modern times is often utilised by the State not only for the benefit of individual patients but for the betterment of the whole community It is a valuable if a more sheltered and inconspicuous rôle than that of the medical politician Still as it has been the endeavour of this lecture to show when the physician lays aside the rod of Æsculapius to enter into the dust and warfare of the political arena, his previous medical training stands him in good stead and he may rise to the height of an ambassador or govern a country as Prime Minister or President

TUBERCULOSIS IN CYPRUS

LAST November Dr Noel Bardswell accompanied by Nurse Jays of the Seamen s Hospital went to Cyprus on behalf of the National Association for the Prevention of Tuberculosis At the annual meeting of the Association at Bristol this week Dr Bardswell is giving an account of the work done on the island in coöperation with the public health department of the Cyprus Government

Cyprus became a Crown colony during the late war when Britain took over the country Of the population of 365 000 299 780 are of Greek extraction, 65 220 Turkish and about 900 British On arrival Dr Bardswell found that while much was to be heard about the Cyprus tuberculosis problem, and its seriousness few definite data were available There is as yet no registration of causes of death other than from natural or unnatural causes, and the Government has no idea as to the annual mortality from tuberculosis Notification of the disease was introduced in 1931 but is very imperfectly observed Accordingly Dr Bardswell has spent five months in touring the island and studying the problem at first hand He found among the people of all classes, an extraordinary and unreasonable fear of the disease which results in its concealment Such is this fear that many will not willingly pass a consumptive patient in the street

In his survey Dr Bardswell examined 600 persons and tuberculin tested 8000 children. His detailed results have yet to be worked out but it can already be stated that the situation is not so grave as has been supposed. Though tuberculosis is scattered throughout the island and is likely to spread as the primitive people are gradually brought under European influence there is every hope that it will be effectively controlled by appropriate methods

The services of Dr Bardswell and Nurse Jays are to be at the disposal of the Cyprus authorities for another year

AN IMPROVED SPECTROSCOPE

The effect of inhalation of carbon monoxide on *hæmoglobin* is well known and the pink colour developed when carboxyhæmoglobin is formed accounts for the florid complexion of persons who have succumbed to this form of poisoning The spectrum of the pink compound differs appreciably from that of the unaltered hæmoglobin in that the two absorption bands are nearer the violet end of the spectrum the displacement being related to the degree of saturation of the blood with carbon monoxide The displacement is not great and any device that will increase it or render the bands more distinct must add to the precision of determinations made by this spectroscopic method

The Hartridge reversion spectroscope by presenting to the eye two spectra one above the other and with the directions reversed doubles the length of the displacement and consequently of the sensitiveness of measurement It has for some years been used by workers concerned with measurements of carbon monoxide in blood. Mr R C Frederick of the Royal Naval College Greenwich, has now improved the Hartridge instrument in some details that make it more exact The height of the bands has been increased so that alignment is more easy and accurate, whilst the introduction of an adjustable slit for the incoming beam of light enables the bands to be more sharply defined. Since this involves a narrower beam the lighting system is made more powerful Other improvements, mainly in mounting and setting up the instrument make for convenience of working The modified instrument and the method of using it are described in the June issue of the *Analyst* (p 452)

VOLUNTARY USEFUL AIDS

SHOCKED by newspaper accounts of children fatally burned through being left in a house alone Mrs Clara Hardy, of Manchester formed an organisation known in London as Voluntary Useful Aids who without payment look after other people s children visit old people and invalids and do other acts of kindness. There are now eight branches but London needs a new honorary organiser Who will give her time and a little money for postage to bring joy to many? Letters should be addressed to Mrs. Hardy 7 Darley avenue, West Didsbury Manchester

A LOST ENGRAVING

Dr NEVILLE M GOODMAN writes: I have been trying to trace an engraving—an aquatint I think—seen for the first and last time at Cambridge some fifteen years ago The subject was a secret anatomical dissection. A surgeon was beginning to dissect the body of a woman: a skin flap turned down from the dorsum of the right hand revealed the tendons which strongly reflected the light of a torch thrust into the abdomen: the chiaroscuro was most striking For some reason which I cannot now remember I have the impression that the picture was Spanish I should be grateful if any of your readers could give me any information

A BOOK ABOUT DROITWICH —An attractive account of Droitwich Spa has been produced by Charles W Hobson Ltd (0 Park place London S W 1) It is in two parts headed the Cure and the Convalescence and it contains all the information intending visitors and their friends are likely to require The spa offers (1) hot saturated brine baths and natural salt therapeutic pools and douches (2) effervescent salt baths at cooler temperatures and (3) tonic aerated brine baths. The saturated brine baths are used chiefly for rheumatic disorders and in the re-education of paralysed or wasted limbs while the effervescent and aerated baths are valuable in circulatory disorders.

THE IRISF EYE LOTION BATH is built up of two parts: the part that fits the eye is of rubber while the part that contains the fluid is of glass The rubber eyepiece fits closely and prevents leakage or discomfort when the eyelids blink The lower glass reservoir has the merit of being transparent and easily cleaned The makers are W Stevens and Co 31 East Hill Wandsworth S W

MEDICAL WOMEN S INTERNATIONAL CONGRESS.—The fourth congress of the Medical Women s International Association takes place in Edinburgh from July 13th to 18th The inaugural meeting will be held at 2.30 P M on Wednesday July 14th in the McEwan Hall University of Edinburgh The speakers include Dr Alma Sundquist the president of the Association Sir Thomas Holland vice-chancellor of the University of Edinburgh Sir Norman Walker Sir William McKechnie and representative medical women from different countries Further information may be had from the local congress secretary 2, Chester-street Edinburgh

Vacancies

For further information refer to the advertisement columns

Albert Dock Hosp , Connaught road, E —Res M O £110
Barnsley Beckett Hosp and Dispensary —Jun H S £200
Bath and Wessex Children s Orthopædic Hosp Combe Park —H S , at rate of £120
Bath, Royal United Hosp —H.P , at rate of £250 Also two H S 's each £150
Benenden, National Sanatorium —Res Asst M O £350
Birmingham City Education Committee.—School M O £1100
Bolingbroke Hosp , Wandsworth Common S W —H P at rate of £120
Bradford New Royal Infirmary —Res M O and Asst Pathologist, £225
Bradford Royal Eye and Ear Hosp —Two H S s, each £180
Bridport and Lyme Regis Boroughs &c.—M O H £800
Brighton Royal Alexandra Hosp for Sick Children —H P 120
Bury Infirmary, Lancs —Res Surg O £300
Cambridge Addenbrooke s Hosp —H P and H S , each at rate of £130
Canterbury Kent and Canterbury Hosp —H P and H S each at rate of £125
Cardiff King Edward VII Welsh National Memorial Assoc —Res Asst Tuber M O for Sully Hosp £500
Cardiff University College of S Wales and Mon —Asst Lecturer in Dept of Anatomy
Carlisle Cumberland Infirmary —H S at rate of £155
Central London Throat Nose and Ear Hosp Gray s Inn-road W C —Hon Assts in Out patient Dept
Cheltenham General and Eye Hosps —H P £150
Chesterfield and North Derbyshire Royal Hosp —H S , at rate of £150
Colchester Essex County Hosp —H S £175
Croydon County Borough —Asst M O H , &c £500 Also Asst M O for Obstetrics, £300
Doncaster Royal Infirmary —H.S £175
Eastbourne Royal Eye Hosp , Pevensey-road —H S £100
Folkestone Royal Victoria Hosp —Jun Res. M O at rate of £120
Gloucestershire Royal Infirmary and Eye Institution.—H.S and H P each at rate of £150
Guildford Royal Surrey County Hosp —H S at rate of £150
Guy s Hosp S E —Clin Asst for Radiology Dept at rate of £150
Hampstead General and N W London Hosp Haverstock Hill, N W —H P , Cas M O and Cas Surg O each at rate of £100
Hertford County Hosp —H S at rate of £180
His Majesty s Colonial Service.—M O.H for Trinidad, £600
Hosp for Consumption and Diseases of Chest Brompton, S W —H.P and H P for Sanatorium Frimley, each £50
Hosp for Tropical Diseases Gordon street W C —Res Med Supt , £400
Hosp for Women, Soho square W —Hon Cons Phys to In patient Dept
Hull Royal Infirmary —Second H P H S , and H S to Ophthalmic &c , Depts each at rate of £150
Ilford Borough —Two Asst M O H s, £500 and £400
Ilford King George Hosp —Two H.S 's each at rate of £100
Ipswich East Suffolk and Ipswich Hosp —Cas O at rate of £144
Keighley and District Victoria Hosp —Res M O at rate of £180
Kettering and District General Hosp —H S and H P at rate of £175 and £150 respectively
Kidderminster and District General Hosp —Jun H S , £100
King s College Hosp Denmark Hill S E —Registrar to Children s Dept and M O to Rheumatism Clinic
Knowle Mental Hosp Fareham Hants —Jun Asst M O £350
Leeds Hosp for Women —Hon Anæsthetist
Liverpool Royal Children s Hosp Myrtle street —Res Cas O , at rate of £250 Res M O and Res Surg O for Heswall Branch each at rate of £120 Also two Res H P s and two Res H S s for City Branch each at rate of £100
London County Council Consultant and Specialist Services —Part-time Consulting Dermatologist, £125
London County Council —Res Med Supt for Eastern Hospital £1100 Asst M O s (Grade I) each £350 Asst M O s (Grade 2) each £250 Also Temporary Dist M O for Hampstead Also Sen Asst M O s (Grade II) £500 and Asst M O s Grade I £350
London Homœopathic Hosp Great Ormond street —Physician for Diseases of Children
Manchester Ancoats Hosp —Cas O £250 Also H S to Ear Nose and Throat Dept at rate of £100
Manchester, Booth Hall Hosp —Res Asst M O at rate of £200
Manchester Crumpsall Hosp —Res Asst M O at rate of £200
Manchester Northern Hosp —Res Surg O £150 Also Res H.P and Res H.S each at rate of £100
Manchester Prestwich Mental Hosp —Locum Tenent M O 7 guineas per week
Manchester St Mary s Hosps —Asst Res Obstet O for Whitworth s reet West Hosp £100
Manchester Victoria Memorial Jewish Hosp Cheetham —Res Surg O , £250
Marie Curie Hosp , 2 Fitzjohn s-avenue N W —Asst Director from £500
Metropolitan Hosp Kingsland road E —Cas O and Res Anæsthetist £100
Middlesex County Council —Sen Dental Officer £700
Mogden Fever Hosp , Isleworth —Asst Res M O £250
Mount Vernon Hosp Northwood —Asst H S £150
Newcastle upon Tyne Hosp for Sick Children —H P and H S each at rate of £100
New Zealand General Hosp Auckland —Deputy Med Supt £800
Nottingham and Midland Eye Infirmary —Res H.S £200
Nottingham City Hosp —Asst Surg O , at rate of £250
Nottingham General Infirmary —Res Cas O , at rate of £150
Oldham Municipal Hosp —Res Asst M O at rate of £200
Oldham Royal Infirmary —Two H S s Also Cas O and H S to Fracture Dept each at rate of £175
Plymouth Prince of Wales's Hosp Devonport —Jun H S , at rate of £120
Plymouth, Prince of Wales s Hosp Greenbank road —H.S at rate of £120
Pontefract General Infirmary —Jun Res M O , at rate of £150
Port of Spain City Council —M O H £800
Portsmouth City Mental Hosp —Locum Tenens A.M O , 7 guineas weekly
Portsmouth Royal Hosp —Fourth H S and Cas O , each at rate of £130
Preston and County of Lancaster Royal Infirmary —H S to Eye, Ear, Nose and Throat Dept at rate of £150
Preston, Sharoe Green Hosp —Jun Asst Res M O at rate of £100
Princess Louise Kensington Hosp for Children St Quintin avenue W —H S at rate of £120–£150
Queen Mary s Hosp for the East End E —Clin Asst to Skin Dept
Redhill Surrey County Hosp —Res Asst M O , at rate of £375
Rochdale Infirmary and Dispensary —Sen H S £250
Rotherham Hosp —H.S for Ophth and Ear, Nose and Throat. Depts £150
Royal Free Hosp , Gray's Inn road W C —In patient Obstetric Asst
Royal Masonic Hosp Ravenscourt Park W —Two Res Surg O s, each at rate of £250
Royal National Orthopædic Hosp —Two H S s for Country Branch, each at rate of £150
Royal Northern Hosp , Holloway N —H.P and Obstet H.S each at rate of £70
Royal Waterloo Hosp for Children, Waterloo road S E —Hon Clin Asst
St Albans Herts, Hill End Hosp for Mental and Nervous Disorders —H.P £165–£200
St Leonard's-on Sea Buchanan Hosp —Jun H S £125
St Paul s Hosp for Urological and Skin Diseases Endell street W C —H S at rate of £100
Salford Hope Hosp —Asst Res M O at rate of £200
Salisbury General Infirmary —Res M O , £250
Sheffield Children s Hosp —H.S £100
Sheffield Jessop Hosp for Women —Res M O at rate of £150
Sheffield Royal Hosp —Clin Asst to Ophthalmic Dept , £300 Also Locum at rate of £80
Sheffield Royal Infirmary —H.S and Aural H S , each at rate of £80 Ophth H.S at rate of £120 Cas O , at rate of £150 Also H.S to Orthopædic, &c , Service £80–£100
South London Hosp for Women Clapham Common S W —Locum Pathologist
Southampton Royal South Hants and Southampton Hosp —Cas O and Res Anæsthetist and H S to Ear Nose and Throat Dept each at rate of £150
Stoke-on Trent, Longton Hosp —H S £160
Stoke-on Trent North Staffordshire Royal Infirmary —Hon Asst Phys Hon Asst Surg Also Hon Asst Aural Surg
Sunderland Children s Hosp —H P and H S each £120
Swansea General and Eye Hosp —H.S , at rate of £150
Victoria Hosp for Children Chelsea S W —H P and H.S , each at rate of £100
Weir Hosp , Balham S W —Jun Res M O £150
West End Hosp for Nervous Diseases Gloucester Gate.—Two Res H P s each at rate of £125 Also Hon Med Psychologist and Hon Clin Asst
West London Hosp Hammersmith road W —Non Res Cas O , £250
West Middlesex County Hosp Isleworth —Asst Pathologist, £650
Windsor King Edward VII Hosp —H.S and Cas O each £100
Wolverhampton Royal Hosp —Asst Res M O for Gyn and Obstet Dept at rate of £100
Wrexham and East Denbighshire War Memorial Hosp —Res H.S at rate of £150
York County Hosp —H P £150
Medical Referee under the Workmen s Compensation Act, 1925 for the Margate and Ramsgate County Court Districts (Circuit No 49) Applications should be addressed to the Private Secretary Home Office, Whitehall London S W 1 before July 18th
The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Bethesda (Caernarvon) Talybont (Cardigan) and West Drayton (Middlesex)

ROYAL EYE HOSPITAL—The clinical society of this hospital will hold a meeting on Wednesday, July 7th, at 5 30 P M when there will be a discussion on the work in continental eye clinics Mr L H Savin will also read a paper on Scandinavian eye clinics which he has recently visited

THE LATE DAME SARAH SWIFT —A service was held on Thursday in the chapel of Guy's Hospital in memory of Dame Sarah Swift, G B E who died on June 27th at the age of 83 After retiring in 1909 from the position of matron at Guy's she was recalled to active service in August, 1914, as matron in-chief of the British Red Cross Society and Order of St John, and became responsible for the inspection of Red Cross hospitals at home and abroad

ADDRESSES AND ORIGINAL ARTICLES

THE VALUE OF EXTRACTS OF SUPRARENAL CORTEX IN THE TREATMENT OF ADDISON'S DISEASE *

By JOHN FREDERICK WILKINSON M Sc PH.D, M D Manch, F R C.P Lond. F I C

HONORARY PHYSICIAN IN CHARGE AND DIRECTOR, DEPARTMENT OF CLINICAL INVESTIGATION AND RESEARCH ROYAL INFIRMARY AND UNIVERSITY OF MANCHESTER LECTURER IN MEDICINE, UNIVERSITY OF MANCHESTER

AT the beginning of 1934 the Therapeutic Trials Committee of the Medical Research Council instituted trials at four different clinical centres of the value of suprarenal cortical extracts in the treatment of Addison's disease. The clinical biochemical and pathological data in this report refer only to the 9 cases treated at Manchester but its main conclusions were adopted at a recent conference on the subject by clinicians who had taken part in the inquiry at all four centres

EXTRACTS

For the purposes of the investigation it was necessary to have l supplies of suprarenal cortical extracts available so as to ensure that cases could be treated to the apparent maximum of their requirements and followed up for sufficiently long periods The two commercial suprarenal cortical extracts used were generously supplied by the respective manufacturers through the Therapeutic Trials Committee They were:—

Cortin (Organon Laboratories London).—A clear solution put up in vials of 10 c cm of which 1 c cm represented 50 g of fresh suprarenal gland and contained one rat muscle recovery unit

Eucortone (Allen and Hanburys Ltd. London).—A clear solution put up in vials of 25 c cm of which 1 c cm was equivalent to 30 g of fresh suprarenal cortex †

With both preparations the full quantity was usually given in one dose up to 10 c.cm., and in divided doses intramuscularly when greater than this amount, intravenously larger doses were usually given in one injection.

No selection of cases was made with regard to the particular preparation to be employed this depended solely upon the supplies of extract available and the demand upon them at the time.

CLINICAL MATERIAL

The patients with Addison's disease included in this investigation were all treated as in patients at the Manchester Royal Infirmary

During the period covered by this report (January 1934–January 1937) a series of 18 cases of Addison's disease has been collected and investigated. The objects of the present inquiry made it essential that the diagnosis of the disease should, as far as possible be beyond doubt, and almost equally important that the patient should be free from complications likely to interfere with or obscure the results Consequently certain characteristic features associated with Addison's disease were selected and cases conforming to these criteria were utilised for the tests (see Table I)

The main points were asthenia and muscular weakness digestive disturbances abnormal pigmentation loss of weight, low blood pressure subnormal temperature changes in blood chemistry

Nine patients were considered to be unsuitable and were excluded from this investigation for the following reasons Three had extensive bilateral acute pulmonary phthisis; in two the syndrome was secondary to malignant metastases in the suprarenals two had abnormal clinical features one had subacute combined degeneration of the spinal cord and Addison's disease and refused treatment for either condition and one died before admission to hospital.

The nine remaining cases exhibiting the typical features of Addison's disease form the basis of this report. Seven were married women with ages varying between 32 and 56 years and two were males aged 17 and 35 respectively Reference to Table I shows that they all complained of asthenia pigmentation of the skin loss of weight varying digestive disturbances (nausea, vomiting indigestion flatulence diarrhœa) and were found to have low blood pressures subnormal temperatures and certain blood changes among other findings

It is not proposed to consider here the symptomatology and diagnosis of Addison's disease, since this

TABLE I

Case.	Sex.	Age.	Length of history (years)	Asthenia.	Pigmentation	Primary colour	Loss of weight	Digestive symptoms	Previous crises	Low blood pressure	Subnormal temperature	Pyrexia	F G.A	Anæmia	B.M.R (per cent)	X ray chest	X ray suprarenals	Family history	Blood urea	Urine: casts and [illegible]
AD/ 8	F	56	1 2	+	++	Bl	+	+	+	+	+	+	Achlorhydria	Sl	− 3	Neg	?	−	High	+
AD/ 9	F	34	1 2	+	++	B	+	+	+	+	+	+	Hypo-acidity	Sl.	− [illegible]	Neg	Neg	Tb	High	−
AD/11	F	26	5	+	++	B	+	+	?	+	+	Nil	Achlorhydria	Sl.	− 5	Neg	?	−	−	−
AD/12	F	40	13	+	+	B	+	+	+	+	+	Nil	Normal	Sl	− 1	?	Neg	−	−	[illegible]
AD/18	M	35	4	+	++	B	+	+		+	+	+	Hypo-acidity	Nil	− 2	Neg	Neg	−	−	[illegible]
AD/22	F	41	[illegible]		++	B	+	+	+	+	+	+	Achlorhydria	Sl	−11	Neg	Neg	−	High	[illegible]
AD/23	F	32	[illegible]		++	B	+	+	−	+	+	Nil	Hypo-acidity	Nil	− 2	Neg	?	−	−	[illegible]
AD/24	F	48	[illegible]		++	B	+	+	−	+	+	Nil	Achlorhydria	Nil.	+ 4	Neg	Neg	−	−	[illegible]
AD/25	M	17	[illegible]		+	Bl	+	+	−	+	+	[illegible]	[illegible]	[illegible]	− 5	Neg	Neg	−	High.	[illegible]

Bl. = Blonde B

pupillary reflexes normal ermann reaction was negative;

until August 20th 19 that time she has attended weekly and y at my clinic up to the present time (June 1937) d ually of note in the chest, abdomen, or nervous system Urine traces of albumin and diacetic acid, Wassermann reaction negative, basal metabolic rate was decreased by 11 per cent, fractional gastric analysis showed achlorhydria, radiograms of the chest and suprarenals were normal, glucose tolerance curves were as follows —

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* A report to the Therapeutic Trials Committee of the Medical Research Council.

† The manufacturers state that Eucortone is now issued in more concentrated form in 10 c.cm vials.

	0	½	1	1½	2	2½ hours
June 22nd	109	141	162	182	137	95 mg /100 c cm
August 7th	109	137	162	167	117	105 , ,

Blood count red blood-cells, 4,224,000, hæmoglobin, 74 per cent, colour index, 0 90, white blood-cells, 8200 (polymorphonuclears 47 per cent, lymphocytes 49 5 per cent, large mononuclears 3 per cent, eosinophils 0 5 per cent, basophils nil), slight aniso and poikilo cytosis, no nucleated red cells, platelets diminished in numbers Blood chemistry urea, 60, sugar, 80, phosphates, 5 3, sodium, 312, chlorides, 445 mg per 100 c cm

Treatment —The patient was given eucortone (12 5 to 25 c cm daily) from June 23rd, 1935, without improvement, 4 lb in weight was lost, and the systolic blood pressure was about 75–85 mm There was slight improvement in the blood chemistry (urea 44, sugar 82, phosphates 4 7, sodium 320, chlorides 450) On August 9th cortin was given daily in doses of 20 c cm and increased four weeks later to 40 c cm intravenously and intramuscularly when there was a relapse and the systolic blood pressure was 90–95 mm, there was slight pyrexia (100° F), and she had albumin and casts in the urine (Blood urea 33 mg, weight 5 st 1¼ lb) The crisis was successfully surmounted and the cortin was diminished to 10 c cm daily There was a slight gain in weight (5 st 5 lb), and the pigmentation had definitely improved, by January, 1936, she had been maintaining a normal temperature, a systolic blood pressure around 98–100 mm nce 110) and diastolic of 50–70 mm Her appetite was ood, and she was in very much better condition than she had been during the whole period (Blood chemistry normal, blood pressure 105/70, weight 5 st) On Feb 15th, 1936, she had a sudden and first paroxysm of auricular fibrillation and died within an hour

Autopsy —Extreme atrophy of both adrenal glands, which were translucent and could only be recognised as shadows in the areolar tissue at the upper pole of each kidney—size about 0 5 cm × 3 cm Microscopically only a few nodules of cortical and medullary tissue were recognisable No evidence of tuberculosis in any organ

FOURTH CASE

CASE AD/25 —A male clerk, aged 17, was admitted to ospital on Dec 5th, 1936, complaining of severe weak ss, loss of energy and weight, dyspnœa, nausea, vomiting, s of appetite, flatulence, increasing pigmentation recurrent fainting attacks for six months His her had achlorhydric hypochromic anæmia and his ther's sister pernicious anæmia, both having attended my clinic for some years Another child aged 15, is under investigation as a potential case of Addison's disease

Examination —Extreme asthenia emaciated and of eunuchoid type without any secondary sexual characteristics Weight, 5 st 8½ lb, height, 5 ft 3½ in, blood pressure, 90/60, pulse 88, regular, feeble Normally of blond coloration, he showed a marked brown pigmentation of skin and mucous membranes The heart, lungs, nervous system, and abdomen did not show any particular abnormal features Urine normal basal metabolic rate — 5 per cent, Wassermann reaction, negative ractional gastric analysis, achlorhydria, glucose tolerance sts not completed on several occasions owing to severe vomiting

Blood count red blood-cells, 4,288,000, hæmoglobin, per cent, colour index, 0 95, white blood-cells, 400 (polymorphonuclears 39 per cent, lymphocytes 5 per cent, large mononuclears 4 5 per cent, eosinophils per cent, basophils 1 per cent), slight aniso and poikilo cytosis, no nucleated red cells many platelets ood urea, 112, sugar, 81, phosphates 4 5 sodium chlorides [illegible]

New Zea[illegible] Hosp, Auckland —Deputy Med Supt, £800
Nottingham and Midland Eye Infirmary —Res H S £200

On Dec 15th, 1935, the blood pressure was 60/40, with much asthenia and severe vomiting He was given 10 c cm cortin daily with immediate symptomatic relief but without effect on the blood pressure and blood chemistry Albumin appeared in the urine (Dec 21st), systolic blood pressure varied between 54 and 68 mm, and the blood urea between 110 and 116 mg Despite the administration of cortin and later eucortone (10–20 c cm daily) the urea only fell to 88, and the systolic blood pressure was 50–60 but frequently could not be obtained, albuminuria persisted irregularly, casts appeared later, while the asthenia, pigmentation, and nausea did not improve further He died on Jan 26th, 1936, without further response (Blood urea, 108, sugar, 91, phosphates, 4 5, sodium, 284, chlorides, 402 mg per 100 c cm, urine contained albumin and casts)

Autopsy —Only a few scattered very small remnants of the suprarenals found—neither the shape nor size of normal glands, microscopically there was only a trace of cortex but some medulla was seen There was no evidence of tuberculosis in the suprarenal glands or other organs There was a catarrhal gastritis acute ulcerative enteritis, congestion of liver, kidneys, and pancreas, enlargement of the spleen (100 g) and thymus The genitalia were much under-developed

Surviving Cases

FIFTH CASE

CASE AD/11 —A housewife, aged 26, was admitted to hospital on May 16th, 1934, complaining of abdominal pain, vomiting, progressive weakness, loss of appetite, and increasing pigmentation of the skin In January, 1934, about two months after a normal pregnancy and parturition, and five months before admission, she began to have attacks of vomiting immediately after taking food followed by severe abdominal pain commencing at the umbilicus and radiating in the left subcostal region to the middle of the back and below the inferior angle of the left scapula This latter pain was of moderate severity, not colicky in type, lasting about 10–20 minutes and unrelieved by medicines These attacks were succeeded by soreness in these areas and feelings of exhaustion During the last 5–6 weeks, however, the pain had been rather less severe and of shorter duration while the vomiting had only occurred in the mornings There was no history of hæmatemesis

Flatulence had been a conspicuous symptom all the time together with headaches and vertigo The appetite had been poor for three months and there had been some loss of weight The bowels were constipated—no history of diarrhœa or sore tongue, there was some nocturnal polyuria During the three months before admission there had been a progressive muscular weakness with marked lassitude Since this time there had been a gradual but progressive darkening of the skin There was no history of cough sore throats or night sweats The menstrual periods lasted three days every twenty days

Previous medical history —Nothing relevant She had two healthy children 2½ years and 6 months old respectively The pregnancies were normal and uneventful There was no previous history of tuberculosis

Family history —Her mother died, aged 46 from cardiac muscle failure, her father was well, aged 52, she had no brothers or sisters There was no tuberculosis in the family so far as could be ascertained The husband was healthy

Examination —A fairly well nourished small woman with very obvious general dark brown pigmentation, light brown bright eyes, normal intelligence She was obviously suffering from extreme asthenia Normally dark brown the hair was black Teeth were good tongue furred and moist, throat and tonsils normal Pulse 130, poor volume, regular very easily compressed Temperature 97°, blood pressure 80/60 Height 4 ft 9 in. Weight 7 st 13 lb The pigmentation was very marked—the skin was almost black in some areas—particularly on the fac round the eyes and mouth, neck, in the axillæ, [illegible] extensor surfaces of the fingers became responsible for the ins[illegible] areolæ There were a pitals at home and abroad [illegible]cal and vaginal mucous

TABLE III

CASE AD/11 (*abridged results*)*

Date	Blood pressure	Treatment	NaCl	Weight	Blood: Urea	Blood: Sugar	Blood: Sodium	Blood: Chloride	Blood: Phosphates
		Cortin c.cm.		st lb					
1034 May 15					96	88	305	440	5 5
16	80/60	1 iv 9 im							
17	93/70	20 iv 20 im							
18	80/64	25 iv 25 im							
19	80/70	25 iv 25 im							
20	80/76	20 iv 20 im		7 12					
21	82/65	20 iv 20 im				83			
22	80/64	30 im							
23	90/64	30 im			92	80	282	428	5 4
24	84/50	20 im.							
26	84/60	40 im							
20	90/68	0 im							
27	90/62	30 im		7 10					
28	90/60	20 im							
29	93/62	20 im			38	90	308	445	4 4
30	86/58	10 im							
31	91/64	10 im							
June 1	94/78	10 im							
2	91/61	10 im							
3	90/60	5 im		7 10					
4	88/60	5 im							
5		5 im							
6	90/60	5 im							
7	91/60	5 im			28	90	320	460	4 3
8	92/62	5 im							
0	9*/62	5 im							
10	88/60	5 im		7 11					
11		2·5 im							
1	90/60	2 5 im							
13	88/62	2 5 im							
11	94/62	2 5 im d			31	80	315	460	4 0
23	90/70	5 im				86			
21	90/68	5 im		7 6					
25	92/70	5 im							
28	90/70	10 im d			45	95	300	44	4 6
July 2	9*/68	10 im d		7 4	41	95	302	438	4 7
11	88/64	10 im		7 5	41	100	300	440	4·3
		Cortin c.cm	NaCl g	st lb					
July 12	90/66	10 im							
13	90/65	10 im							
14	90/64	10 im	5						
15	85/61	10 im	5	7 5					
16	88/60	10 im	10						
17	92/63	10 im	10						
18	92/66	10 im	10						
19	93/70	10 im	10						
20	92/60	10 im	10		22	85	3°8	465	3 8
21	90/58	10 im	15						
22	90/60		15	7 9					
23	100/68	10 im	15						
24	91/62		15						
25	93/61	10 im.	15						
26	94/64		15						
27	90/69	10 im	15						
28	96/66		15						
29	92/60	10 im	15	7 11					
30	92/60		15						
31	93/58	im alt days	15 d		20	90	330	465	3 7
Aug 6	100/60	5 im every 3rd day	15 d	7 10					
10	102/60	5 im every 3rd day	15 d	7 10	°0	90	330	475	3 7
16	108/70	Cortin stopped	15 d	7 1	20	91	328	475	3·7
2*	104/70	5 im once	15 d						
23	100/65	Nil.	15 d		23	82	3*8	485	3·0
Sept 5	100/76	5 im once.	15 d						
19	98/65	5 im weekly	15 d	8 4	20	100	330	402	3·7
Oct 16	100/68	5 im weekly	15 d		*0		328	495	3·6
Nov 27	104/70	Cortin stopped.	15 d		20	95	328	405	3 5
1935 Mar 26	104/70	Nil	15 d	7 8	*3	84	328	490	3 8
May 31	104/70	Nil	15 d	7 8½	*0	82	328	486	3 1
Aug 16	100/60	Nil	15 d	7 9		82	328	400	3 7
1936 Jan 7	12 /88	Nil	15 d	8 0	0	90	330	49°	3 3
April 22	104/ 2	Nil	15 d	8 0½	18	81	3*7	468	3 4
Dec. 5	96/80	Nil.	15 d	8 0					
193 June 12	110/75	Nil.	15 d						

membranes. There were darker pigmented spots on the dorsum of the arms and hands The rest of the body showed a deep brown generalised pigmentation

Abdomen: there was a diffuse tenderness especially round the umbilicus but nothing was felt The liver kidneys, spleen and lymphatic glands were not enlarged Heart not enlarged apex beat not palpable sounds distant no bruits Lungs: appeared to be normal. Nervous system: nervous and pupillary reflexes normal. Urine was normal Wassermann reaction was negative

URINE *Daily Chloride Excretion (g)*

July 13	2 3	July 19	9 5	July 26	17 1	Aug 6	10·*
14	*·9	20	10·8	*7	17·0	10	16 5
15	3 0	1	8 8	28	16 5	16	16·7
16:	6 6	22:	8·0	29	10·0	2	16·?
17	7·0	23:	9·0	30	16 6	*3	18·8
18:	7 8	25	17·0	31:	16 1	Nov * :	10 0

* This Table is much abridged The patient was seen daily until August *0th 1934 when discharged from hospital From that time he has attended weekly and later fortnightly at my clinic up to the present time (June 1937) d. = daily

blood urea, 96 , blood chloride, 440 , serum sodium, 305 , serum phosphates, 5 5 , blood sugar, 83 mg per 100 c.cm

Blood count (May 16th, 1934) was as follows red cells, 4,860,000 , hæmoglobin, 88 per cent , colour index, 0 95 , white cells, 8200 (polymorphonuclears 45 5 per cent , lymphocytes 44 per cent , large mononuclears 7 per cent , eosinophils 2 5 per cent , basophils 1 per cent), slight aniso and poikilo cytosis , no nucleated red cells , platelets abundant Fractional gastric analysis showed achlorhydria Basal metabolic rate was diminished by 5 per cent Radiological examination of the chest was negative , there was a faint shadow over the upper pole of the right kidney—? calcification of suprarenal gland Sugar tolerance tests after 50 g glucose were —

	1934— May 21st	July 5th	Aug 24th
Fasting sugar	0 083	0 091	0·082
½ hour	0 152	0 152	0 121
1 ,,	0·081	0 152	0 121
1½ hours	0·087	0 101	0 109
2	0 104	0 145	0 107
2½ ,,	0 118	0 123	0 103
Glycosuria	slight	slight	Nil

The results of the investigations carried out during treatment are shown in Table III

Treatment —For the first few days after admission the patient had severe attacks of nausea and vomiting, but after intensive treatment with cortin she gradually picked up and showed a marked general clinical improvement The gastro intestinal symptoms disappeared and there was a slow but progressive diminution in the pigmentation to a moderate brown colour—this has slowly improved since The blood pressure increased slightly but the weight fell for the first seven weeks, after which the loss was regained (Table III) The subnormal temperature rose to normal levels after about 7 to 8 weeks

On July 14th sodium chloride was added to the diet in doses of 5 g and then 10 g daily This was increased to 15 g on July 21st It will be noted that, before this salt treatment was commenced, the daily excretion of sodium chloride was about 2–3 g but this excretion increased to 15–18 g with the added salt diet It is possible that this added salt may have influenced the increase in weight and the return to normal temperature The blood analyses showed an increase in the chlorides and sodium contents

Since discharge from hospital, the patient has continued to attend my clinic at weekly and later fortnightly intervals. She remained perfectly well during that time, and the cortin was gradually reduced, until the last dose of 5 c cm on Nov 27th, 1934 Since that time she has not had any further suprarenal cortical extract, but has continued to take 15 g of salt daily When last seen she remains in perfect health (June, 1937), and although her general colour is still a light brown the colour is much less than originally She does not complain of any symptoms Her weight is 8 st and she does all her own housework without fatigue

SIXTH CASE

CASE AD/12 —A housewife, aged 40, had scarlet fever and otitis with subsequent deafness (1904), shingles and influenza (1917), normal pregnancy (1924), appendicectomy (1926), and had been treated for several years for her gastro intestinal disturbances In 1931 she was first diagnosed as suffering from Addison's disease, receiving suprarenal cortical extracts at intervals with benefit She had not had any for four months before admission to the Manchester Royal Infirmary on Oct 11th, 1934, when she complained of recurrent attacks of nausea, vomiting, indigestion, flatulence, vertigo, headaches, weakness, loss of appetite, weight, and energy, palpitation, brown pigmentation of the skin, and constipation

Examination showed moderate asthenia, slight wasting, and typical distribution of brown pigmentation in skin and mucous membranes Blood pressure 95/65 pulse, 64, regular soft temperature, 98° F weight, 7 st 3 lb , height, 5 ft 2 in marked koilonychia There was nothing of particular note in the heart, chest, abdomen, and nervous system Urine, normal , glucose tolerance curve normal , basal metabolic rate decreased by 1 per cent , Wassermann reaction, negative , fractional gastric analysis free hydrochloric acid titres were 25 (0 hr), 4 5 (¼ hr), 4 (½ hr), 14 (¾ hr), 17 (1 hr), 6 5 (1¼ hr), 22 (1½ hr), 25 (1¾ hr) c cm

Blood count red blood cells, 4,030,000 , hæmoglobin, 80 per cent , colour index, 1 , white blood-cells, 9000 (polymorphonuclears 62 per cent , lymphocytes 28 5 per cent , large mononuclears 4 per cent , eosinophils 5 per cent , basophils 0 5 per cent), slight aniso and poikilo cytosis , platelets abundant , no abnormal cells or staining Blood chemistry urea, 34 , sugar, 80 , phosphates, 3 8 , sodium, 324 , chlorides, 480 mg per 100 c cm Radiograms of chest showed some fine mottling in the right apex, suggestive of tuberculosis There was marked calcification in the costal cartilages, but no evidence of calcification in the suprarenal areas

Treatment —Having been under observation without treatment for 15 days, and during salt administration (15 g daily) for a further 30 days without any improvement, she was given eucortone intramuscularly 5 c cm did not give complete relief but 10 c cm daily was sufficient to produce good improvement in her symptoms and very marked fading of the brown pigmentation The systolic blood pressure range increased slightly from 85–95 to 90–105 mm , her weight remained about 7 st , the blood chemistry was normal and she was discharged on Dec 18th, 1934, with instructions to take 15 g of salt daily She later discontinued this, remained well until June, 1935, when she relapsed Her condition then was similar to that when first seen—blood pressure 94/60 , weight, 7 st , blood chemistry not significantly altered She was given 15 g salt daily and then cortin 5 c cm intra muscularly monthly with an excellent response On Jan 31st, 1936, she had blood pressure 110/64 ; weight, 7 st , normal blood chemistry , practically no pigmentation or asthenia On Jan 13th, 1937, she had maintained her improvement blood pressure 110/80 , weight, 7 st 8 lb , normal blood chemistry

SEVENTH CASE

CASE AD/18 —A male presser, aged 36 was admitted to hospital complaining of weakness, loss of weight, flatulence, dyspepsia, nausea, vomiting, epigastric pain, and very marked pigmentation of the skin and mucous membranes The latter had become much greater after a bilateral cervical sympathectomy which had relieved the symptoms of Raynaud's disease from which he was suffering There was nothing else of note in his previous medical or family histories

Examination —Asthenia , some wasting , dark brown pigmentation of skin, mucous membranes, and almost black in old operation scars There was some scleroderma of hand, face, neck, and old healed and partially healed ulcers on the pulps of the fingers Weight, 8 st 3 lb , blood pressure, 100/65 , pulse, 76, regular and soft , temperature, 97° F The heart, lungs, and nervous system were normal Urine normal , basal metabolic rate decreased by 2 per cent glucose-tolerance test normal , Wassermann reaction negative , fractional gastric analysis 8 (0 hr), 5 (¼ hr), 10 (½ hr), 12 (¾ hr), 14 (1 hr), 14 (1¼ hr), 11 (1½ hr), 5 (1¾ hr), 8 (2 hr) 7 (2¼ hr) c cm Blood count red blood-cells, 3,896,000 , hæmoglobin, 96 per cent , colour index, 1 23 , white blood cells, 8000 (polymorphonuclears 67 5 per cent , lymphocytes 28 per cent , large mononuclears 2 per cent , eosinophils 2 5 per cent , basophils nil), slight aniso and poikilo cytosis , no nucleated red cells , platelets fairly abundant Blood chemistry urea, 38 , sugar, 100 , phosphates, 4 1 , sodium, 332 , chlorides, 454 mg per 100 c cm Radiological examinations did not disclose any evidence of tuberculosis in the chest or suprarenals

Treatment —He was given 5 c cm eucortone intra muscularly daily for one week and thereafter on alternate days He improved very rapidly gastro intestinal symptoms disappeared, appetite and weight increased, but the blood pressure remained unaltered The pigmentation was slightly less obvious, and he was discharged after five weeks with a normal blood count, basal metabolic rate, and blood chemistry He has attended my clinic at irregular intervals, but does not receive any treatment and maintains his improved condition although there has not been any further improvement in the pigmentation His blood chemistry is normal

This patient appears to have a very chronic benign type of Addison s disease

EIGHTH CASE

CASE AD/23 (partially described in *The Lancet* 1936 2 967) —A housewife (aged 32) was admitted to hospital on Jan. 14th 1936 complaining of extreme weakness loss of energy backache progressively increasing pigmentation of the skin. She had lost weight and had had occasional attacks of vomiting

Examination —Slimly built (weight 7 st 12 lb) moderate asthenia; pulse 72 regular blood pressure 125/75 (on admission) There were old scars in left upper cervical and submastoid regions from excision of old tuberculous glands in childhood. Dark brown pigmentation of skin and mucous membranes of typical distribution

Urine normal; basal metabolic rate −2 per cent; Wassermann reaction, negative; fractional gastric analysis 24 (0 hr) 4 (¼ hr) 0 2 (½ hr); 0 (¾ hr); 7 (1 hr) 12 (1¼ hr); 17 (1½ hr) c.cm Glucose-tolerance curve 77 (0 hr) 120 (½ hr); 112 (1 hr) 100 (1½ hr) 100 (2 hr) mg per 100 c cm Blood count red blood cells 4 900 000; hæmoglobin 93 per cent; colour index, 0 93 white blood-cells 12,600 (polymorphonuclears 47 5 per cent lymphocytes 46·5 per cent large mononuclears 6 per cent eosinophils nil basophils nil); slight aniso and poikilo-cytosis no nucleated red cells platelets diminished somewhat in numbers. Blood: urea 24 sugar 77 phosphates 3 8; sodium 330 chlorides, 460 mg per 100 c cm Radiograms: chest negative loins showed an irregular calcification at the upper pole of the left kidney with slight extension along the outer border faint trace of calcification above the upper pole of the right kidney

Treatment —After admission to hospital pigmentation increased the systolic blood pressure fell to 95–105 mm and the weight to 7 st 6 lb without gross changes in the blood From Feb 1st 1936 she was given 10 c.cm cortin twice daily then once daily until Feb 23rd when it was reduced to 5 c.cm daily and later alternate days Her weight gradually increased the pigmentation became less, she felt much stronger and was free from symptoms. The interval between doses of cortin was gradually increased and she was discharged on April 9th 1936 (blood chemistry normal; weight 8 st 3¾ lb blood pressure 108/70) being instructed to take 15 g salt and lemon or orange juice daily

Since then she has regularly attended my clinic has continued to improve taking salt 7 5–15 g daily Cortin (2 5–5 c.cm.) was given about once per fortnight until August 1936 when it was discontinued entirely On June 5th 1937 she was in excellent health; blood pressure 124/85; weight 8 st. 12 lb normal urine and blood chemistry; the brown pigmentation had disappeared completely from the mucous membranes and was much less obvious in the skin—the knees, knuckles areolæ being rather browner than normal

NINTH CASE

CASE AD/24 (see *The Lancet* 1936 2 967) —A housewife aged 48, was admitted to hospital on Nov 14th 1935 complaining of severe asthenia, rapidly increasing pigmentation pain in the back and occiput constipation, loss of appetite flatulent dyspepsia nausea occasional vomiting and very marked loss of weight (4 st in less than 12 months)

Examination.—Asthenia Considerably emaciated so that there was extreme redundancy of the abdominal skin Weight 7 st 12½ lb; pulse 92 regular fair volume; blood pressure 120/70 The pigmentation of skin and mucous membranes was the most marked of the whole series of cases, being a dark mahogany to black at pressure points There were no abnormal features in the heart lungs nervous system, abdomen.

Urine normal basal metabolic rate increased by 4 per cent; Wassermann reaction negative fractional gastric analysis, achlorhydria; glucose tolerance test 77 (0 hr) 95 (½ hr) 113 (1 hr); 10. (1½ hr); 100 (2 hr) 91 (2½ hr) mg glucose per 100 c cm. Blood count: red blood-cells, 5 2 0 000; hæmoglobin 96 per cent; colour index 0·91 white blood-cells 5000 (polymorphonuclears 41 5 per cent lymphocytes 46·5 per cent large mononuclears 9 per cent eosinophils 2 5 per cent basophils 0·5 per cent) slight aniso and poikilocytosis; no nucleated red cells; platelets fairly abundant Blood chemistry: urea 20 sugar 81 phosphates 4; sodium 328 chlorides 460 mg per 100 c.cm Radiograms of chest and suprarenal glands were normal

Treatment.—After admission her blood pressure fell to 103/65 remaining about that level Cortin was commenced on Nov 23rd, 1935 with 10 c cm daily increased to 20 c.cm. for a few days and then reduced to 10 c.cm again The blood urea was 24 mg; the blood pressure was unchanged but she lost more weight By Jan. 25th 1936 however she was putting on weight pigmentation was much less obvious blood chemistry and basal metabolic rate were within normal limits The dose of cortin was gradually reduced to 5 c.cm on alternate days and she was then given salt (15 g daily) She was discharged from hospital on Feb 12th, 1936 considerably improved (weight 8 st 3½ lb blood pressure 135/75 basal metabolic rate and blood chemistry normal) She has attended my clinic regularly since then the cortin being gradually reduced and finally discontinued (August 1936); she takes 7 5 g salt daily and in January 1937 was very fit and well and free from symptoms (blood pressure 145/85 weight, 8 st 8 lb) The pigmentation is very much less Throughout the period her temperature has varied only slightly between 97 –98·4 F rising to 99 F on three occasions

Discussion of Results

DOSAGE OF EXTRACTS

Intravenous and intramuscular routes were used, the former being less unpleasant for the patient especially with the larger volumes of extract As indicated above the doses were usually divided when the total daily amount was over 10 c cm but not necessarily so when less than 10 c cm Daily doses varied from 2 5 c cm up to a maximum of 50 c.cm. in crises.

The impression gained from this work is that better results are obtained when the daily dose is divided into three or four portions and given at intervals during the 24 hours rather than in a single dose

No reactions were noted in any of these patients after the use of these extracts, and there does not appear to be any need for a small preliminary test dose before giving the large quantities required in a crisis In the case of certain batches of one cortical extract some local pain was experienced after intramuscular injection—this was completely eliminated by suitable change in the pH of the extract as a result of the tests made for the Therapeutic Trials Committee

It will be clear from the case notes that very large doses of suprarenal cortical extract (up to 40 or 50 c cm daily) may be required in the initial stages of treatment and since it may be necessary to continue these for long periods the cost of treatment may be heavy

By reference to Table IV it will be seen that the total amounts of cortical extracts used on these nine cases were 65 six between 140–605 940 and 3015 c.cm respectively With satisfactory responses to treatment and especially after the addition of sodium chloride (15 g daily) to the diet it was usually possible to reduce the maintenance dose of cortical extract very rapidly and ultimately to discontinue it entirely This is well illustrated in the Tables and case notes.

The return of sudden crises with pyrexia as in cases AD/8 and AD/9 and the failure of cortical extract to initiate further remissions even in large doses in these cases would appear to favour the suggestion of Hartman and Winter (1933) that an irreversible condition may sometimes develop and account for the fatalities

TABLE IV

Case	Total amount of cortical extract given	Present maintenance treatment	Length of survival since beginning of treatment (months) June 1937	Suprarenal gland.	Present condition
AD/ 8	(c cm) 450	—	1	Tb	Dead
AD/ 9	465	—	1	Tb	Dead
AD/11	940	Salt (15 g)	37	—	Alive very well
AD/12	140	Salt (15 g)	32	—	
AD/18	65	Nil	34	—	
AD/22	3015	—	8	Atrophy	Dead*
AD/23	345	Salt (15 g)	17	—	Alive very well
AD/24	605	Salt (15 g)	19	—	
AD/25	480	—	2	Atrophy	Dead

* Cardiac failure and auricular fibrillation

SURVIVAL

Of the nine cases eight showed satisfactory responses to suprarenal cortical extracts at first, but ultimately four died in hospital after periods of 4, 4, 32, and 8 weeks respectively, at the present time (June, 1937) five are alive and very well after periods of 37, 32, 34, 17, and 19 months respectively These now take only maintenance doses of salt (7 5–15 g daily) without cortical extracts and are all in good health showing steady improvement The ultimate outlook for these patients cannot of course be other than speculative, but the remarkable responses suggest the possibility of some improvement in suprarenal secretory function

Autopsies were carried out on the four fatal cases, in two (AD/8 and AD/9) the suprarenal glands were almost completely replaced by tuberculous or calcified material, radiological examination had detected calcification shadows in AD/8 only The other two (AD/22 and AD/25) showed atrophied glands in which hardly any cortex could be identified There was no evidence of gland regeneration in these four cases

When considering the cause of death of these four patients it appears probable that three of them died as a result of the destruction or atrophy of the suprarenal glands and ultimate failure of treatment with suprarenal cortical extracts to supply sufficient of the cortical hormone to maintain life, it may be that case AD/25 did not receive enough extract and had larger doses of say 40–50 c cm been given daily a remission might have been produced

The fourth, case AD/22, certainly died from cardiac muscle failure following acute auricular fibrillation at the time that the Addison's disease was in remission and under good control. She had received in all over three litres of suprarenal cortical extract

ASTHENIA

The gradual disappearance of general asthenia, muscular weakness, feeling of exhaustion, and apathy under the influence of the suprarenal cortical extracts was very striking in eight of the patients, while the ninth (AD/25) showed it to a less extent since his condition was never adequately under control. These changes were always followed by a rapid improvement in the mental attitude of the patient When crises occurred these symptoms tended to return if prompt measures were not taken

GASTRO INTESTINAL DISORDERS

All the patients suffered at some period from disorders of the alimentary tract—usually loss of appetite, nausea, and vomiting, but less frequently flatulent dyspepsia, diarrhœa, or severe constipation

It is interesting that five had achlorhydria, three hypochlorhydria, and only one (AD/12) presented a normal gastric secretion—this patient had the longest history and was the least pigmented of the series These digestive symptoms were very rapidly relieved in the course of a few days by adequate cortical extract therapy, and appetite returned to normal proportions—in some cases even becoming excessive The onset of a crisis was always heralded clinically by loss of appetite, nausea, and vomiting and served as a sharp warning that urgent treatment was required, further, the rapid relief of these symptoms indicated the possibility of reducing a large dose of extract—a matter of some practical importance

This rapid response to adequate treatment with cortical extracts will be of great value in routine treatment since it has proved almost impossible to give salt orally to the acutely ill cases until the gastro intestinal symptoms have been relieved. This was the position with patient AD/25 who never really responded to the cortical extracts sufficiently to get a relief from nausea and vomiting for more than 48 hours at a time In case AD/12 the administration of salt first did not relieve the digestive symptoms which promptly responded to suprarenal cortical extract (It is worth mentioning when considering these gastro intestinal symptoms that another case not included in this series was ultimately found to have both a gastric and a duodenal ulcer)

PIGMENTATION

It is now accepted that although pigmentation is usually noted in Addison's disease it is not always present (2 of the 9 rejected cases were not pigmented although the diagnosis was confirmed)

However, in this series pigmentation was one of the essential points in selection so that all the cases showed it clearly All the nine cases showed much improvement after the administration of cortical extracts and the lessening of the brown coloration of the skin continued in the patients who survived even after the cortical extracts had been stopped and salt continued as the only maintenance therapy When crises recurred the pigmentation also increased again but the amount depended upon the rapidity with which the crises developed. Thus, cases AD/8 and AD/9 became more pigmented during their final crises than AD/22 who died, in a remission, following a sudden heart attack.

The five surviving patients have shown a rapid disappearance of the pigmentation from the mucous membranes, but that of the skin is much more persistent while there has not been any detectable change in the colours of the hair and eyes As case AD/22 improved she developed a very marked desquamation of the skin, a condition which was noted to a less degree in cases AD/11 AD/23, and AD/24

TEMPERATURE

The whole series of patients had subnormal temperatures lying between 97°–98° F Two (AD/8, AD/9) had pyrexia at the times of their crises and tuberculous glands were found at autopsy, the temperatures of cases AD/11 AD/18 AD/23 and AD/24 were between 97–98 F but gradually showed a slight rise to 98–98·4 F when stabilised on cortical extracts. Patients AD/22 and AD/25 were usually between 97–98 F but on about six occasions in 8 months AD/22 had slight pyrexia over 99° F she ultimately had a very constant temperature of 97 8°–98 2 F during the last eight weeks of life

From this small series of cases it appears probable that the occurrence of pyrexia in Addison's disease is a bad prognostic sign and is more commonly seen in and reaches higher levels in those of tuberculous origin Very large doses of cortical extract must be given to these cases when crises are imminent together with salt therapy if possible

BASAL METABOLISM —WEIGHT

The basal metabolic rates were within normal limits and were not affected significantly by treatment.

A gain in weight is considered to be a good sign but it was noticed that there was often a time lag between the onset of good remissions and the appearance of a weight increase so that loss of weight was often noted in cases commencing remissions The weight evidently does not furnish a very sensitive index of the changing condition of the patient although as a gross confirmatory sign it has its place

BLOOD PRESSURE

In some cases an initial low blood pressure may not always be noted There is also general agreement that the blood pressure does not show much alteration after treatment with cortical extracts. In this series one case (AD/23) on admission had a systolic pressure of 110–125 for some days but this rapidly fell to around 95–100 mm after treatment with cortical extract and salt the blood pressure now is about 120–130 Two cases (AD/18 AD/24) had pressures of 100–105 mm the former has remained unaltered but the latter after about three months showed an increase in level around 110–124 and more recently has risen to 145 mm Case AD/12 initially around 95–100 mm has shown some general increase to 100–112, while case AD/11 originally 80–90 mm increased to 90–100 mm after about three months and recently has been as high as 122 mm Three had systolic blood pressures between 70–80 but only case AD/22 showed any rise in systolic pressure to 95–100 mm after treatment One (AD/25) varied about 60 mm was frequently less, and many times could not be determined—there was no response to treatment in this fatal case

There appears no doubt at all that there was little change in the blood pressures after several months in most of my cases treated with suprarenal cortical extracts alone but with the addition of salt was followed by increases in the general levels of the blood pressures (cases AD/11 AD/12 AD/23 AD/24—AD/22 had only small irregular amounts of salt) Similarly when salt was given first as in case AD/12, a significant increase was not noted until suprarenal cortical extract was given

Those cases not receiving salt (AD/8 AD/9 AD/18 and AD/25) did not show any significant increases in blood pressure but it may be that AD/8 AD/9 and AD/25 did not survive long enough.

CHANGES IN BLOOD AND URINE

Blood-sugar and carbohydrate tolerance —Various statements have been made by different observers as to the state of the blood-sugar—some describing hypoglycæmia as a constant feature others finding no abnormalities None of my cases had very low blood-sugars when examined regularly

Glucose tolerance tests were carried out on seven patients—in some cases being repeated before, during and after treatment On account of nausea and vomiting two cases failed to keep down the glucose on several occasions; of the other seven three gave normal results while three displayed an increased and one a decreased carbohydrate tolerance There was no obvious change under treatment while the patients were in hospital.

Blood chemistry —The chemical changes in the blood in Addison's disease are of considerable importance and have received much attention *more particularly* in the last two years since the significance of the sodium and chloride levels were appreciated following the work of Baumann and Kurland (1926) Marine and Baumann (1927) Loeb and others (1932 1933) The recent paper by Allott (1936) gives his results in eight cases and summarises the main chemical changes in the blood in suprarenal insufficiency These included a fall in sodium and chloride contents of the serum an increase in the potassium magnesium and phosphates, and a rise in the blood urea and non protein nitrogen

In my nine cases the blood changes were not so constantly abnormal as Allott found and some of them had little alteration from the normal (cp Cases 12, 18 23 24); it has been my experience that the blood changes *cannot* be used as diagnostic criteria *in very early* cases of Addison's disease This will not be considered further here since I am only concerned with the effects of suprarenal cortical extracts on these constituents of the blood Throughout these clinical investigations the changes in the urea, sodium chlorides and phosphates were utilised as additional but subsidiary guides for treatment and dosage—the urea estimation proving the most sensitive chemical index

Those cases in which remissions were initiated by adequate treatment with cortical extracts, showed rapid improvements in the chemistry of the blood—the *most striking* being the quick return of the blood urea to normal, followed rapidly by improvement in the sodium chloride and phosphate values The five cases now in very good health have normal blood constituents at the present time The persistence of a high blood urea was indicative of inadequate treatment while a progressive rise in the urea called for immediate and urgent measures

Hæmatology —All these patients had regular blood counts three had normal blood pictures and six suffered from slight hypochromic microcytic anæmia Iron treatment was purposely omitted for this during the whole of the test period in hospital and *no improvement* was noted following the use *of cortical extracts or salt* No eosinophilia was noted in this series before or after treatment with cortical extracts

Urinary changes —Simultaneously with a rising blood urea and non protein nitrogen during the commencement of a crisis urinary changes were noted Albuminuria appeared first and this was rapidly followed by the appearance of casts red cells and leucocytes When suprarenal cortical extract was given in sufficient amount to cause a remission the urine promptly returned to normal often within 48 hours

Summary

1 The value of suprarenal cortical extracts in the treatment of Addison's disease has been investigated

on behalf of the Therapeutic Trials Committee of the Medical Research Council.

2. Nine patients with typical uncomplicated Addison's disease and two standard commercial suprarenal cortical preparations (cortin and eucortone) have been used for these tests.

3. Four of the patients died despite intensive treatment—three from Addison's disease and one, in remission, from cardiac muscle failure following auricular fibrillation. Two of these showed tuberculosis and two complete atrophy of the suprarenal glands.

4. Five patients have responded to treatment very well and are alive and in good health, the longest period of survival to date being 3 years 1 month, and the shortest 19 months. One was a chronic case of moderate severity—not now taking treatment—and four were acute severely ill cases who responded to cortical extracts and are now on daily maintenance doses of sodium chloride.

5. Large doses of cortical extract have often been required; they are safely given intramuscularly or intravenously and are free from unpleasant reactions. After satisfactory responses the dose can be reduced considerably, while combined with salt therapy even greater reductions in dosage can be made. The maximum total amount of cortical extract given to any one patient during treatment was three litres, while the minimum total amount required has been 65 c.cm.

6. Using these cortical extracts symptoms of asthenia, muscular weakness, digestive disorders (particularly nausea and vomiting and diarrhœa) are promptly relieved; appetite returns, weight increases, mental outlook improves, pigmentation slowly fades.

7. There is a slight improvement in the subnormal temperature after cortical extracts but the occurrence of pyrexia is a bad prognostic sign and even very large doses of cortical hormone may be unavailing.

8. The blood pressure may take two or three months to show any significant improvement, and then apparently only if cortical extracts are given with or followed by sodium chloride therapy.

9. Changes in the chemistry of the blood and urine show rapid responses to adequate amounts of suprarenal cortical extracts. A high blood urea returns quickly to normal, with a simultaneous disappearance of albumin, casts, and cells from the urine; while sodium, chlorides, and phosphates return to normal values in the blood.

10. Suprarenal cortical extract has no effect on the slight hypochromic microcytic anæmia frequently present, while the basal metabolic rate is also unaltered.

11. Suprarenal cortical extracts are of very definite value in the treatment of Addison's disease if given in adequate dosage. It is the only treatment of any real value in acute crises. In my series reported here, five out of nine cases have had excellent remissions and are practically in normal health now as a result of this treatment. One case also lived eight months by its use but died from another cause during a period of steady remission. Two others were temporarily improved until sudden crises with pyrexia failed to respond to further treatment.

My thanks are due to the physicians of the Manchester Royal Infirmary for their help in the collection and accommodation of this group of cases in their wards for long periods. I am glad to acknowledge the valuable help of Dr. W. Susman, who carried out the four autopsies, reports of which have been included in this paper; Mr. H. Varley, M.Sc., for his assistance with biochemical estimations, and other members of my staff who have helped with the large amount of investigational work and collection of the necessarily large mass of data in this inquiry.

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TREATMENT OF CUSHING'S SYNDROME WITH LARGE DOSES OF ŒSTRIN

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IT is becoming increasingly difficult for the clinician to pick his way through the fog of conflicting evidence that has accumulated regarding the effect of œstrin on the anterior lobe of the mammalian pituitary gland. Zondek (1936), Spence (1936), and Jones and MacGregor (1936), in their recent papers, have dealt exhaustively with the vast literature on the subject, and Zondek is of the opinion that the varying experimental results obtained by the many workers they quote are due largely to variation in dose and duration of treatment, small doses having a stimulant, large doses a depressant, action. Several years ago both Zondek (1931) and Fluhmann (1931), using œstrin, were able to obtain an inhibitory effect on the human anterior pituitary, and their results led to the trial of the hormone as a therapeutic weapon. Frank and Salmon (1935) showed that œstrin could inhibit the gonadotropic hormone in women at the menopause and Jones, MacGregor, and Tod (1937) have now applied this with resulting symptomatic relief in menopausal depression. Spence (1936) has attempted to depress thyroid activity via the anterior pituitary in thyrotoxicosis, but without success, and Cookson (1936) was also unable to obtain benefit in the same condition. It seemed to me that, if an inhibitory effect could be produced on the secretion of the basophil cells of the anterior pituitary, some relief might follow in those cases of Cushing's syndrome thought to be the result of pituitary basophilism. This paper records the trial of large doses of œstrin as a therapeutic measure in the treatment of three such cases.

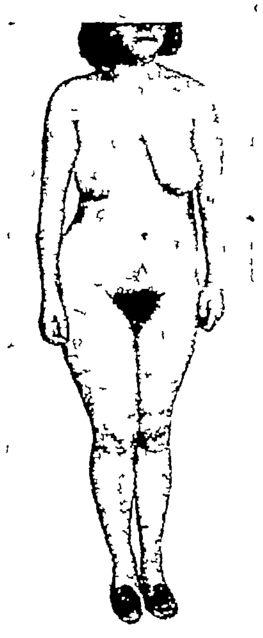

FIG. 1 (Case 1).—Showing distribution of hair and obesity.

CASE REPORTS

CASE 1—A female, aged 15 first attended the out-patient department of the Middlesex Hospital in April 1936 at the age of 14 complaining of lassitude and severe frontal headaches of some two years' duration. Although her periods had not yet begun the secondary sex characters were fully developed

On examination she showed obesity, her weight being over 12 st hypertrichosis, with pubic hair of masculine distribution (Fig 1); abdominal striæ an enlarged clitoris; and hypertension the blood pressure varying between 140/85 and 155/100 mm Hg Routine clinical neurological examination, radiograms of the pituitary fossa and examination of the visual fields and optic fundi revealed no abnormality A sugar tolerance test however showed a flat curve with a low renal threshold, and the basal metabolic rate was minus 32 The blood Wassermann reaction was negative Radiograms of the long bones and of the abdomen and a retrograde pyelogram were all normal and the blood figures for urea non protein nitrogen and cholesterol were within normal limits. A blood count showed 105 per cent of hæmoglobin and 5 420 000 red cells

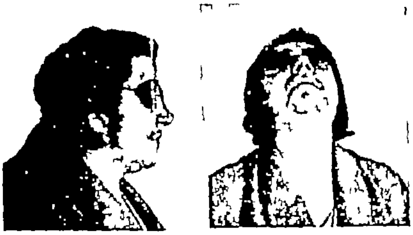

FIG 2 (Case 2).—Showing hypertrichosis

Treatment—A laparotomy was performed by Mr Vaughan Hudson no adrenal or ovarian tumour was found and the uterus was infantile *After* the operation she continued to attend the out-patient department her headaches and lassitude remaining unaltered On Nov 2nd she was given 100 000 international benzoate units of Progynon B Oleosum forte (Schering) intramuscularly and thereafter the injections were continued daily the dose rising to 200 000 units on Nov 9th and remaining thus until Dec 21st The duration of treatment was 50 days and the total dose given was 0,300 000 units.

Result—The treatment had no effect on the obesity hypertrichosis abdominal striæ amenorrhœa, or hypertension. She felt much better however and during the 50 days she had only five headaches as opposed to a previous average of five a week. Two weeks after cessation of treatment she menstruated but there have been no further periods. Six weeks after the last injection her lassitude and headaches returned and although these are not so severe as formerly they are quite as frequent

CASE 2—A female aged 40 came to the out-patient department in November 1936 complaining of lassitude backache, and severe headaches of four months duration There was a history of eclampsia during the first pregnancy but she had since had two normal confinements. Her periods had recently become irregular

On examination she showed obesity her weight being nearly 13 st.; hypertrichosis (Fig 2); abdominal striæ; and hypertension, the blood pressure ranging from 165/100 to 180/1?0 mm Hg Routine clinical neurological examination the visual fields and optic fundi, a sugar tolerance curve and radiograms of the pituitary fossa were all normal The basal metabolic rate was minus 10 the blood figures for urea non protein nitrogen and cholesterol were within normal limits and a blood count showed 100 per cent of hæmoglobin with 4 740 000 red cells A plain radiogram of the abdomen revealed no abnormality She was given a course of deep X ray therapy to the pituitary and her headaches were somewhat improved while her periods became more regular After this she continued to attend out-patients and from March to November 1036 her backache and headaches became increasingly severe

Treatment—From Nov 9th to Dec. 21st she was given 200 000 international benzoate units of progynon daily by the intramuscular route receiving in all 8 600 000 units over a period of 43 days.

Result.—There was no effect on the obesity, hypertrichosis abdominal striæ, or hypertension but her backache and lassitude were considerably improved and her headaches vanished. She ceased to menstruate during treatment and there has been no period since. Some five weeks after her last injection her headaches and backache returned and are now as bad as ever

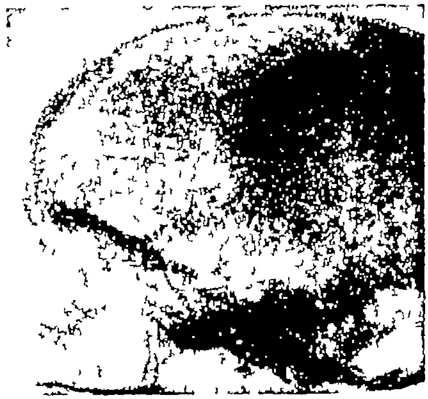

FIG 3 (Case 3)—Radiogram showing small pituitary fossa.

CASE 3—Since the age of 11 this patient, a female aged 22 has become increasingly stout and her weight in December 1936 was 12½ st. She complained of lassitude, backache and frontal headaches of six months duration. Her periods were scanty and irregular

On examination she showed obesity; hypertrichosis; abdominal striæ; and hypertension the blood pressure varying between 140/90 and 180/100 mm Hg Routine clinical neurological examination, a sugar-tolerance curve and examination of the visual fields and optic fundi showed no abnormality but a radiogram of the skull revealed a small pituitary fossa (Fig 3) The basal metabolic rate was plus 3 The blood figures for urea non protein nitrogen and cholesterol were within normal limits and a blood count showed 95 per cent of hæmoglobin with 4 100 000 red cells A plain radiogram of the abdomen was normal After her discharge from hospital she attended out-patients regularly her symptoms and physical signs remaining unaltered

Treatment.—From Dec 30th 1930 to Feb. 12th, 1937 she was given a daily intramuscular injection of 200 000 international benzoate units of progynon, receiving a total of 0 000 000 units over a period of 45 days

Result—During this time her obesity, hypertrichosis, abdominal striæ, hypertension, backache, and lassitude remained unaltered Her headaches, however, greatly improved and averaged only two a week They had previously been a daily occurrence Menstruation ceased altogether Two weeks later her headaches returned with their former frequency and severity

SUMMARY AND CONCLUSIONS

1 Three cases of Cushing's syndrome were given large doses of œstrin daily over a period of several weeks

2 No effect was obtained on the obesity, hypertrichosis, abdominal striæ, or hypertension

3 Subjective improvement was noted in all three cases, and the severe headaches, such a distressing feature in this condition, were either abolished or greatly improved

4 The cause of these headaches is obscure, no less obscure is their relief by injections of œstrin Such evidence as there is suggests that the headaches are not due to enlargement of the pituitary gland with distension of its dural envelope, nor can they be due to the arterial hypertension, since this remained unaltered by the injections

I am indebted to Dr T Izod Bennett for his thoughtful encouragement and ready permission to treat cases under his care My thanks are also due to the directors of the departments of pathology, biochemistry, and radiology for the various special investigations, to Dr L R Gardner for the photographs reproduced in Figs 1 and 2, and to Messrs Schering Ltd for the supplies of progynon

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THROMBO-ANGIITIS OBLITERANS IN FATHER AND SON

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CONSIDERING the fact that in the ætiology of thrombo angiitis obliterans (Buerger's disease) the assumption of some predisposing constitutional factor is almost necessary, it is surprising that more than one member of the same family is so seldom affected I mean that the suggested exciting causes, such as tobacco smoking, do not seem to act in the absence of some unknown constitutional predisposing factor—possibly a developmental defect in certain blood vessels Moreover, I still maintain that, in London at any rate, the majority of the sufferers are members of Central European Hebrew families

Meszaros in 1931 found that 8 members of a pure Hungarian family were affected with an arterial disease, but as 4 of the 8 were females, and as no microscopic examination was made, I do not think that his cases were true examples of Buerger's thrombo angiitis obliterans as he maintained. For the same reason one cannot accept certain cases quoted by Meszaros from other articles on the subject—namely, Niemeyer's cases in mother and son and Higier's cases in two sisters—though he also mentions Goldflam's cases in two brothers and Idelson's cases in father and son

Samuels (1932), however, wrote

> In the examination of over 500 cases of thrombo angiitis obliterans I have observed three families in which it occurred in brothers In none of these families has there been any history of the disease in parents or grandparents on the maternal or paternal side, nor has there been evidence of the disease in other blood relatives

In two of the families three and in the other family two brothers were affected, but in each of the 8 cases heavy cigarette smoking could be adduced as a possible toxic cause of the disease

CASE REPORT

In the following cases of father and son now under my observation, tobacco cannot be altogether excluded as a cause

The father, now aged 58½, a Hebrew cabinet-maker from Russia, had the small toe of his left foot amputated in London for gangrene 16 years ago Next year (August 1922) his left foot was amputated in Berlin The wound did not heal and in the following month his left leg was amputated After this he had no trouble in the stump of his left leg, but in 1924 he began to suffer from pains in his right toes In December, 1926, he was admitted under my care at the German Hospital, London The tip of the second toe of the right foot was black and there was some discoloration of the third and great toes No pulsation was felt in the dorsal and other arteries of the right foot There was normal pulsation in both radial arteries at the wrist Brachial blood pressure 145/80 mm Hg Blood Wassermann reaction negative By ordinary clinical examination nothing else abnormal was found The treatment included intravenous sodium citrate injections, small doses of potassium iodide by the mouth, locally hot air baths, Bier's passive congestion treatment, and the application of xeroform powder Progress was very slow and tiresome, partly in hospital and partly in his own home, but the tip of the second toe came away spontaneously, and finally healing was complete by the end of 1928 After that he remained well I saw him in April 1937 He says he can walk as much as a mile without stopping, though he occasionally feels a little pain in front of the ankle (his only leg) The "cure" in this case is a functional one there is no pulsation to be felt in the dorsal or other arteries of the foot and the needle of Pachon's oscillometer gives hardly any oscillation with the band round the calf He still smokes about ten small cigarettes daily

The son, aged 33, is now in hospital under my care for thrombo angiitis obliterans he was the second son Two years ago he began to have intermittent claudication in the right leg, with the usual pain in the calf on walking, and since September, 1936, he has suffered from ischæmic troubles in the right foot—in spite of intramuscular injections of Padutin and Carnacton. He has an ischæmic ulcer on the dorsum of the right foot and the black mummified little toe of that foot has just been shed spontaneously He says he has smoked only about ten cigarettes daily Though the left foot appears normal, no pulsation can be felt in the dorsal artery of either foot The oscillometer index at calf level is 0 15 on right side, 0 3 on left side, over the right thigh it is 3 5 and over the left thigh also 3 5 No arterial calcification is seen by radiography in either leg Blood pressure in right arm, 140/70 mm Hg, in left arm, 120/60 mm Hg Blood Wassermann reaction negative Nothing abnormal found in ordinary examination of thorax, abdomen, nervous reactions, retinæ urine, and blood (except slight anæmia and leucocytosis) Blood sedimentation within normal limits Blood serum cholesterol 150 mg per 100 c cm Blood uric acid 3 mg per 100 c cm Blood serum calcium 8 4 mg per 100 c cm Fasting blood sugar 0 113 per cent

There is now hardly any pain, and under rest and local applications the foot is tending to heal A liver extract by the mouth may be acting favourably

I have never met with thrombo angiitis obliterans in brothers, and only once in father and son—namely in the above-described cases Recently a son of one of my earlier patients returned from America with what he thought might be his father s disease thrombo angiitis obliterans but on examination it turned out to be a form of chronic rheumatoid arthritis

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AGRANULOCYTIC ANGINA, PURPURA AND TUBERCULOUS LARYNGITIS

COMPLICATING PULMONARY TUBERCULOSIS

WITH RECOVERY

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THIS paper describes the case of a woman of 26 admitted to King Edward VII Sanatorium Midhurst with a large tuberculous cavity at the apex of the right lung complicated by laryngeal tuberculosis An artificial pneumothorax was instituted and while collapse was being obtained there was a spread into the left lower zone. Sanocrysin injections were therefore given but after seven injections totalling 1·05 g agranulocytic angina and purpura developed. A blood transfusion and Pentnucleotide injections were administered and from one of the latter a staphylococcal abscess of the buttock formed. A leucocytosis occurred and recovery ensued. Subsequently phrenic evulsion and upper thoracoplasty supplemented the pneumothorax and closed the cavity in the lung. Meanwhile with silence and the galvanocautery the severe laryngeal involvement healed and after fifteen months of continuous treatment she was discharged fit and well and sputum free.

Agranulocytosis has seldom been noted as a complication of gold injections although there have been many descriptions of it following administration of amidopyrine Ellman and Lawrence (1935) reported a patient with rheumatoid arthritis who received a total of 2 5 g of Solganol B and developed agranulocytosis with purpura hæmorrhagica and died. Hartfall and Garland (1935) reported 100 cases of rheumatoid arthritis treated with gold injections with one fatal case of agranulocytosis after a total of 1·0 g. of Crisalbine and two of purpura hæmorrhagica following 0 30 g and 2 3 g. of gold salt respectively

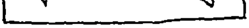

FIG 1

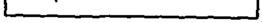

FIG 2.

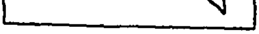

FIG 3

In the discussion on agranulocytosis at the Royal Society of Medicine (1936) most blame was laid on amidopyrine but Sir William Willcox referred to gold among numerous other chemical agents as a possible causal factor

In association with pulmonary tuberculosis agranulocytic angina has been recorded by Erwin (1933) and Morris, Miller and Neville (1935) though in neither case was gold or other drug given both were fatal. Though purpura occasionally follows the gold treatment of pulmonary tuberculosis it is not a common complication and agranulocytic angina appears to be exceptional.

In all accounts of agranulocytosis its grave prognosis is emphasised and most patients die in spite of treatment Specific treatment with pentnucleotide with recovery was first described in this country by Bulmer (1933) This method is still recommended but is often disappointing in its results and Witts (1936) does not particularly favour it It may however help to stimulate leucocytosis, and blood transfusion and liver therapy have also been suggested In this particular case a staphylococcal abscess of the buttock developed and Dr R A Young who was then in charge of the patient, was of the opinion that this contributed largely to the subsequent leucocytic response which had until then been obstinate. He informs me that he has had two other similar cases of recovery from agranulocytic angina.

Sir StClair Thomson (1924) has shown how laryngeal tuberculosis complicating a pulmonary lesion makes the prognosis both immediate and remote much less favourable though not hopeless Adequate treatment of the primary lesion with closure of cavities and freeing the sputum of tubercle bacilli has a secondarily beneficial effect on the laryngeal disease. At the same time strict rest of the voice, and in suitable cases the use of the galvano cautery in experienced hands, encourages healing of the larynx and improvement here is usually concurrent with improvement in the lung

CASE RECORD

The patient aged 26 was the wife of a bank clerk in London and was admitted to King Edward VII Sanatorium on Nov 27th 1935 with pulmonary tuberculosis No family history of tuberculosis or definite contact were known. In August 1935 she had become debilitated nursing her mother-in law with jaundice A dry cough developed later lassitude malaise night-sweats and shortness of breath Her doctor had the sputum examined and it contained tubercle bacilli

On admission on Nov 27th she was improved but was coughing up 2 oz. of sputum daily Temperature was 98 4 F and pulse rate 78; weight 8 st 13 lb and height 5 ft 4 in. Her voice was husky but she had no pain on swallowing Blood sedimentation was 22 per cent (micro method) Radiography showed a large right apical cavity and surrounding infiltration (Fig 1) Sir StClair Thomson examined the larynx and reported tuberculous laryngitis with interarytenoid deposit and abrasion of both vocal cords She was put on a régime of strict silence

Right artificial pneumothorax was induced on Dec 9th with moderate collapse of the lung and considerable general reaction and increase of sputum In January infiltration spread into the left lower lobe accompanied by left-sided pleurisy (Fig 2) Sanocrysin injections were therefore given weekly in the following dosage 0 05, 0 1, 0 1, 0 2 g et seq up to 1 05 g by Feb 18th This day she complained of sore throat and the next evening her temperature, previously normal, rose to 100° The throat was worse red and swollen and swallowing was very painful On Feb 20th the temperature was 102 4° and she seemed very ill The throat appeared inflamed but there was no exudate Swabs were repeatedly negative for diphtheria An erythematous and purpuric rash appeared on the shoulders, chest, and neck These symptoms and signs persisted during the next few days in spite of general treatment The diagnosis appeared to be acute *tonsillitis* but was obviously not of usual type The temperature rose to 103 4° and pulse rate to 120 She felt ill and complained of soreness of the throat and much difficulty in swallowing The pharynx was red and swollen with no gross exudate or membrane

On Feb 25th Dr K F W Hinson, pathologist at the sanatorium, made a white blood count and found 2100 white cells per c mm , no polymorphonuclears being seen in stained films The diagnosis of agranulocytic angina was thus made evident The next day the white cells were 2700, with no polymorphonuclears but a few myelocytes A blood transfusion of one pint of citrated blood with 8 c cm of pentnucleotide was given, 20 c cm more pentnucleotide were injected intramuscularly, and she was transferred to the Middlesex Hospital under the care of Dr R A Young

Further injections of pentnucleotide were made intramuscularly on four more days From one injection she developed a staphylococcal abscess of the buttock and from that moment her blood picture and also her clinical condition began rapidly to improve It appeared that this complication was the determining factor in her subsequent recovery This proceeded apace, the temperature settled and the symptoms were relieved By March 28th she was able to sit up, the temperature was nearly normal, and the sputum reduced from several ounces and frothy to half an ounce mucopurulent She returned to the sanatorium on April 24th much improved but still with a troublesome cough and sputum containing tubercle bacilli The blood count showed 11,200 white cells per c mm with polymorphonuclears 71 per cent , lymphocytes 20 per cent , and monocytes 9 per cent The lung condition had not changed , there was collapse in the lower part of the right pneumothorax but the apex was adherent and the cavity open The larynx, in spite of the recent severe adjacent trouble, was indolent and chronic The vocal cords were now clear but the interarytenoid deposit persisted

On May 5th the right phrenic nerve was crushed by Mr Tudor Edwards to try to assist the closure of the apical cavity Sir StClair Thomson carried out treatment of the larynx with the galvanocautery on August 10th with excellent results and subsequent complete healing and recovery of the voice The phrenic paralysis was not adequate and upper thoracoplasty was carried out by Mr Tudor Edwards , 37 in from the upper six ribs were resected in two stages on Sept 19th and Oct 3rd The artificial pneumothorax was continued throughout and eventually a most satisfactory result was obtained By January, 1937 the apical cavity was not visible and the left lung had cleared up entirely (Fig 3) Clinically she had no cough or sputum since December and the sputum had been free from tubercle bacilli since November She was eventually discharged from the sanatorium on Feb 17th 1937, after 15 months' treatment, extremely fit, walking four miles daily and with no symptoms

SUMMARY

The significant points in this case are —

A young woman with severe pulmonary tuberculosis and a large apical cavity , a spread into the other lung Laryngeal tuberculosis Sanatorium treatment, artificial pneumothorax, and sanocrysin injections *Agranulocytic angina and purpura*, treated by blood transfusion and pentnucleotide From an injection of the latter a staphylococcal abscess developed which appeared to initiate or accelerate recovery Return of the blood to normal. Recovery of the larynx with voice rest, galvano cautery, and treatment of the lung Artificial pneumothorax supplemented by phrenic crush and then upper thoracoplasty to obtain complete obliteration of the apical cavity in the lung, the pneumothorax still being maintained Patient eventually discharged after 15 months' treatment, very well

I have to express my thanks to the Council and consulting staff of the sanatorium for permission to publish this case, and to Dr G S Todd, medical superintendent, for invaluable advice and help in treatment , also to Dr R A Young, under whose care the patient was in the Middlesex Hospital

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ACCESSORY SPLEENS

By Milroy Paul, M.S Lond , F R C S Eng
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Accessory spleens have no place in standard text books of surgery[3, 5, 19, 21], Moynihan made no mention of accessory spleens in his book "The spleen and some of its diseases," and yet accessory spleens are not uncommon, they are described in most text books of human anatomy[4, 6, 9, 16] Adami and Nicholls[1] found accessory spleens in 11 per cent of autopsies Jolly[11] found 20 cases of accessory spleens amongst 80 autopsies in children under 16 years of age, which would suggest that these spleens are more common in early life, and that possibly they atrophy with increasing years The scanty notice taken by surgeons of accessory spleens is due to their small size and to their protected positions in the abdominal cavity Accessory spleens are sometimes called splenculi or lienculi on account of their sizes, which vary from that of a lentil to that of a hazel nut

Accessory spleens may however be of clinical importance on rare occasions Maingot[15] made a careful search for accessory spleens in a series of 13 cases of splenectomy for purpura hæmorrhagica, and he found no less than 7 cases He emphasises the importance of extirpating all accessory spleens in such cases, lest these tissues should undergo a further hypertrophy and thus cause a continuance of the morbid condition for which splenectomy was undertaken The most remarkable case of the hypertrophy of accessory splenic tissue is that recorded by Eccles and Freer[8] in which a splenectomy for a traumatic rupture of the spleen was followed by enlargement of an accessory spleen to the size and shape of the normal spleen in ten years time

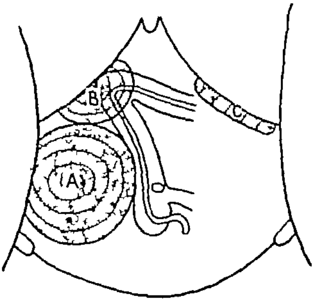

FIG 1.—Diagram showing the position of the two accessory spleens (A and B) and the normal spleen (C)

ANATOMY

Accessory tissues with blood sinuses fall into three groups The true accessory spleen with blood sinuses and malpighian bodies the hæmal gland with blood sinuses and the hæmal lymph gland with blood sinuses and lymph sinuses communicating with the blood and lymph systems respectively

The true accessory spleens appear to be of two types. In the first, the accessory spleen is a constricted part of the main spleen with which it is connected by a band of fibrous tissue. In the second type it is a separate and distinct tissue mass. A typical example of the first type of accessory spleen is described by Helly[10]

In this case the spleen was divided by a groove into two segments joined by connective tissue bands carrying the branches of the splenic vessels There were 11 accessory spleens varying in size from a lentil to a hazel nut attached to the main spleens or to their connecting bands by strands of connective tissue By placing the two main spleens together the divided spleen could be made to approach the size and shape of the normal spleen.

Another remarkable case of this type is described by Sneath[11] Here an accessory spleen was found adherent to the upper pole of the left testicle where it was completely ensheathed by the tunica vaginalis This spleen was connected with the main spleen by a band of tissue 33 4 cm. long of which 14 5 cm contained visible splenic tissue The accessory spleen must have been carried down to its unusual position during the descent of the left testicle from the abdominal cavity

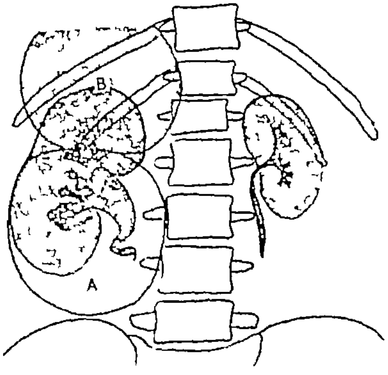

FIG 2.—Tracing from a radiogram showing the two accessory spleens and the enlarged right kidney and renal pelvis.

Spleens of the second type which are found as separate masses of tissue, are usually one or two in number, but more may be present. Albrecht[2] reports a unique case of this kind with 400 spleniculi scattered throughout the abdominal cavity The main spleen was also present being situated higher than normal with adhesions to the diaphragm The present paper describes a case with accessory spleens of the second type The spleens were so large that they had given rise to clinical symptoms and signs

CASE REPORT

The patient was a Sinhalese girl of 15 years who was admitted to the General Hospital on July 14th, 1936 with the provisional diagnosis of right congenital polycystic kidney She had noted a lump on the right side of her abdomen for the last ten years In the last month she had had a dull aching pain in the right side of the abdomen and in the last year she had had an increased frequency of micturition of six times in the day and once at night as compared with three times in the day and nothing at night previously Her menstrual periods had been regular for eight months from their onset but she had had no periods for the last eight months. Three months previously she had had malaria

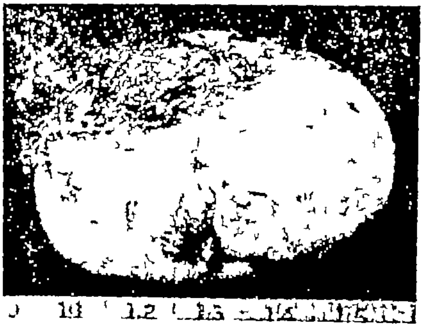

FIG 3.—Accessory spleen removed at operation (A in Fig 1)

Examination —She was a well nourished girl of a healthy appearance. There was a round lump the size of a grape fruit on the right side of the abdomen (Fig 1 A) It extended from the right loin to the anterior abdominal wall and it was dull on percussion It could be moved inwards up to the umbilicus and then a resonant note was obtained on percussion over the inner side It did not move on respiration. Above the lump was a second round lump which reached from below the right costal margin down to the upper pole of the first lump (Fig 1 B) The spleen was enlarged a fingers breadth below the left costal margin (Fig 1 C) A rectal examination revealed no abnormality in the pelvis

A radiogram after an injection of Uroselectan B showed a normal pelvis and ureter on the left side while on the right side the pelvis of the kidney was three times the natural size but was perfectly normal in shape (Fig 2) The outlines of the two lumps are also seen in the radiogram

Urine albumin and sugar nil, in the deposit there were a few uric acid crystals and an occasional pus cell Blood urea 38 mg per 100 c cm

The enlarged right kidney shown in the radiogram was not sufficiently large to account for the lumps which were palpated in the abdomen It was considered that the right kidney was hypertrophied as a result of the pressure on the right ureter by the lower abdominal lump This lump was considered to be an ovarian dermoid with a long pedicle, and the abdomen was explored through a right paramedian incision on July 20th

Operation —A large round lump, the colour of splenic tissue, was seen in the right side of the abdomen, lying in a retroperitoneal position with the cæcum and ascending colon pushed over to its inner side (Fig 1) The lump was mobilised by incising the peritoneum passing from its surface to the lateral abdominal wall, and it was now delivered through the abdominal wound Entering on its postero internal side at a hilus was a pedicle of blood-vessels, each vessel the diameter of a lead pencil The vessels were ligatured and the lump was removed, as it was considered to be causing harmful pressure on the right ureter The right kidney was palpated lying in its retroperitoneal bed, and the spleen was felt to be of normal shape and in its normal place Below the liver and behind the hepatic flexure of the colon was a second lump also the size of a grape-fruit and the colour of the spleen with large veins coursing over its surface It was not considered necessary to remove this second accessory spleen, and the abdominal wound was now closed

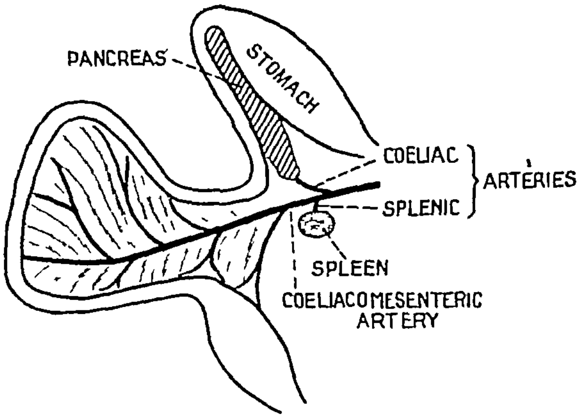

FIG 4.—The relations of the spleen in the frog

The patient made an uninterrupted recovery from the operation and left the hospital on August 8th

Blood examinations were made to determine if there might be any cause in this case for a hypertrophy of the splenic tissues

Blood count red cells, 3,710,000 per c.mm, white cells, 5200 per c mm Differential count polymorphs, 64 per cent, lymphocytes, 34 per cent, eosinophils, 2 per cent No malarial parasites in the film Recticulocyte count 0 8 per cent Fragility of red cells hæmolysis began in 0 4 per cent saline and was complete in 0 34 per cent saline

It will be noted that apart from the history of "malarial fever" there is nothing to account for a hypertrophy of splenic tissue in this case

Pathology —The accessory spleen weighed 1¼ lb when fresh Fig 3 shows the specimen after it had been preserved for some days It is oval in shape and the vessels enter at a hilus an inch long on what was its postero internal aspect Prof W A E Karunaratne made this report on a section from the specimen 'The section shows splenic tissue with angiomatous spaces, in some of which red blood-cells are visible, but the majority of the spaces are empty Lymph follicles are dotted here and there in the section The capsule is very much thickened" The section had less malpighian bodies than are found in sections of normal splenic tissues

DISCUSSION

This case is remarkable on account of the unusual size of the two accessory spleens The lower spleen had pressed on the right ureter causing the unusual sequel of hypertrophy of the right kidney Hydronephrosis would have been a more usual result of such pressure

The position of the accessory spleen in this case is unusual Keith[12] states that accessory spleens are found in the dorsal mesogastrium near the hilum of the main spleen. Rocher[18] states that accessory spleens are found near the hilum of the spleen in the gastrosplenic omentum, the pancreaticosplenic ligament, and the great omentum Rudimentary masses of splenic tissue have even been found embedded in the pancreas Accessory spleens occur therefore in that part of the dorsal mesogastrium that is supplied by branches of the cœliac axis In the case described above, the accessory spleens were found in what was originally the part of the dorsal mesentery that was supplied by the post-axial branches of the superior mesenteric artery

The normal spleen develops in the left leaf of the dorsal mesogastrium Here the accessory spleens occupied positions corresponding to what were originally the left leaves of the dorsal mesentery

Can the positions of the spleen found in this case be explained by a reference to comparative anatomy? The spleen is remarkably constant in position right through the gnathostome vertebrate series Even in the elasmobranch fishes, the spleen lies to the left of stomach and is supplied by the lienogastric artery In some amphibians and reptiles, however, the position of the spleen differs from other vertebrates by being placed opposite the intestines[7] In the frog the spleen is a small spherical body lying in the left leaf of the dorsal mesentery, and it is supplied by the cœliaco mesenteric artery which gives off in the pre axial direction the cœliac and mesenteric branches, and in the post-axial direction the splenic and colic branches (Fig 4)

Sir Colin Mackenzie[13, 14] has drawn attention to the colic lobe of the spleen in monotremes, but even in these mammals the spleen lies to the left of the stomach in the dorsal mesogastrium and it is supplied by the cœliac axis The position of the accessory spleen in the case described above is comparable to that of the spleen in some amphibians and reptiles

SUMMARY

1 *Accessory spleens are very* rarely the cause of the clinical symptoms and signs on account of their small size and protected positions

2 Accessory spleens are of two types, those which are constricted portions of the main spleen and those which are independent masses of tissue

3 A case is described with two accessory spleens of the latter type, which had caused clinical symptoms and signs on account of their unusually large size

4 The position of the accessory spleens in this case is unusual, but it is comparable to the position of the spleen in some amphibians and reptiles

My grateful thanks are due to Prof W C O Hill for valued help with the anatomical points dealt in this paper I am indebted to Mr A M Mendis of the General Hospital for the photographs and to Mr S C N Cotton of Messrs Plate Ltd for the reprint of the X ray picture

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CLINICAL AND LABORATORY NOTES

TWO CASES OF PREGNANCY WITH GENERAL PARALYSIS OF THE INSANE

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Two women with general paralysis of the insane have been successfully delivered while under treatment at Winwick Hospital and have made partial or complete recoveries The cases are I think of interest not only because they are unusual but because of certain points of similarity and contrast in the clinical states and treatment

The first patient, a primigravida was before her illness a bright intelligent woman She responded well to treatment her progress was uninterrupted and she was discharged recovered The second patient a multigravida had been less quick witted and more indolent mentally Moreover on admission her speech and muscular coördination were seriously affected and she was accordingly given slightly different treatment These facts must be considered in accounting for her less satisfactory progress

Certain factors were common to both—namely their age (40), the stage of pregnancy on admission (4–5 months) their progressive mental deterioration for at least two months, and the fact that neither had had any antisyphilitic treatment. Both were in a fat flabby and indolent state with faulty habits, and complete indifference to their surroundings. Defective articulation and muscular incoördination were only evident in the multigravida In both patients the laboratory tests for syphilis were positive in blood (Meinicke and Kahn) and in spinal fluid (Kahn) the cells were increased the globulin test was positive the protein content raised and the Lange curve was of a paretic type

As the primigravida was in poor health with a cardiac murmur a copious foul vaginal discharge and occasional albuminuria, no antisyphilitic drugs were given the treatment being solely directed towards improving her general health; it was thought unlikely that the fœtus would survive The multipara on the other hand received antisyphilitic treatment at once In both patients labour was induced at term by means of quinine and castor oil

The primigravida bore a healthy looking boy His blood gave weak positive results with the Meinicke and presumptive Kahn tests, the routine Kahn and Wassermann being negative The multigravida bore a delicate female child in whose blood all the tests for syphilis were positive Antisyphilitic treatment in the form of mercury iodides, and a course of Quinostab injections was given to both patients After this the primigravida was subjected to therapeutic malaria She sustained eight rigors five of these giving temperatures of well over 105 F A second course of quinostab &c and exposure to ultra violet light was followed by steady improvement which continued up to recovery and discharge from hospital within a few months She was then cheerful mentally composed and fully aware of her new responsibilities. Her blood and spinal fluid were still positive but the *Lange curve had changed from a paretic to a luetic one*

The multipara was also treated after confinement with quinostab injections &c. but the fever was induced with Pyrifer twelve injections producing eleven rigors Further antisyphilitic treatment had to be discontinued because of toxic symptoms. She too showed improvement in her mental state but this has not yet progressed to recovery She is still in hospital, she is easily confused and if she is excited muscular tremors appear and her speech becomes affected Her blood and cerebro-spinal fluid still give positive tests and her Lange curve has remained paretic

OBSERVATIONS

(1) The favourable results in these *cases may* have been due to the strain of pregnancy accelerating the toxæmia of syphilis thus forcing attention to the mental state earlier than is usual *in women* affected by *general paralysis.* (2) The extra strain of pregnancy may contra indicate antisyphilitic therapy until after delivery (3) The *primigravida* who had no antisyphilitic treatment before parturition had a living and healthy child with limited positive tests In this case the later treatment with drugs and malaria gave excellent results (4) The multigravida who had antisyphilitic treatment before parturition also *had a living child but it was weak and gave positive* results with all syphilitic tests. In this case the later treatment was with pyrifer not malaria antisyphilitic therapy had to be discontinued and the results were not so good (5) These findings seem to support the opinion of Scandinavian authorities that antisyphilitic treatment *in late tertiary syphilis may* be useless and even harmful (6) The patient treated with pyrifer was clinically in a more advanced state of paresis than the one treated with malaria and it cannot be deduced that malaria as a curative agent is superior to pyrifer

I am indebted to Dr F M Rodgers, medical superintendent of Winwick Mental Hospital for permission to publish these cases.

(Continued from previous page)

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BRUCELLA ABORTUS INFECTION

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AND
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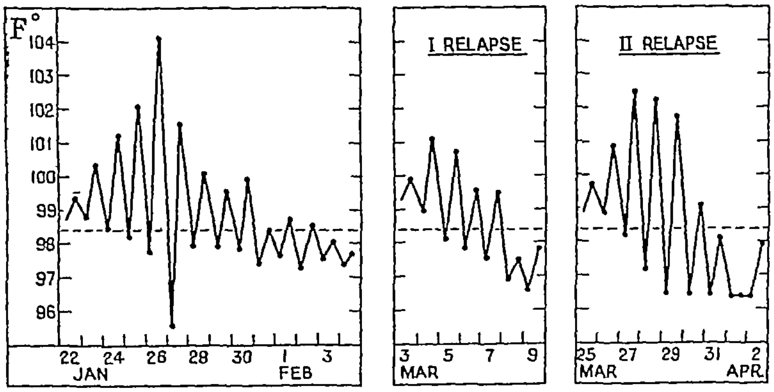
The case here recorded is one of *Brucella abortus* infection in a young child showing clinically only continued remittent fever and a slightly enlarged spleen

The patient is a healthy Japanese girl aged 6 who has been living in this country for two and a half years The only previous illnesses have been whooping-cough and diphtheria In the middle of December 1936 she and her sister contracted influenza together and this child had a high temperature and bronchitis lasting about ten days On Jan 21st, 1937, she went to a party, and on the following day complained of fatigue and anorexia and showed a slight temperature Subsequently the temperature rose regularly every afternoon and came down with a great deal of sweating in the morning (see Chart) She was restless during the night Otherwise she complained of nothing On examination the pulse rate was 100–140, respirations 22–28 her tongue was fairly heavily furred but always moist There was a small hyperæmic swelling in the external meatus of her right ear, from which she felt only a sensation of heat in the ear On Jan 24th a small gingival abscess near a decayed tooth, of which she had not previously complained, burst From that day she was given half a tablet of Prontosil Album three times a day The spleen gradually became enlarged until Jan 26th, and thereafter diminished There were no other physical signs during her illness

On Jan 25th in the evening her temperature rose to 104 2° F , but after aspirin gr 2½ a profuse perspiration was accompanied by a fall of temperature to 95 5° F , pulse rate 82 and weak, and she appeared somewhat collapsed From the following day the temperature began to subside, and several days later it became normal



Temperature charts of the initial infection and of the two relapses

The swelling of the auditory meatus disappeared without bursting

Blood collected on Jan 27th, tested against Oxford Standards Laboratory cultures, agglutinated *Brucella abortus* to a dilution of 1 in 500, but did not agglutinate *Brucella melitensis, Bacillus typhosus* H or O, *Bacillus paratyphosus* A or B A blood culture also taken on Jan 27th subsequently grew an organism which is considered, for the reasons set forth later, to be a true *Br abortus* The leucocyte count on this day was white cells, 4600 per c mm , differential count polymorphs 25 0 per cent , lymphocytes 59 5 per cent , hyalines 15 5 per cent , 62 per cent of the polymorphs were of the relatively immature "band" type There was no urinary abnormality On Feb 5th—that is, eight days later—the titre of the serum against *Br abortus* was unaltered

There have so far been two relapses, the first starting on March 3rd and lasting until the 8th, and the second from March 25th until the 31st (see Chart) The clinical features of the two relapses were quite similar to the original attack The spleen was definitely enlarged, especially in the second relapse when it was palpable from the first day of the illness The hyperæmic swelling of the auditory meatus was also noticed Sweating was not so excessive as in the original attack The second relapse began with vomiting She was given prontosil from the beginning of the relapses During the second relapse she was also treated with an instillation of 5 oz of 1 in 5000 acriflavine in normal saline into the colon repeated daily for ten days as suggested by Arnold Jones (1935) The recovery from the last attack appeared excellent The child is fatter and is less pale, whereas during convalescence from the previous attacks she remained thin and pale

An attempt was made to discover the source of the infection. The girl had never been in contact with cows, and the milk supply was pasteurised and obtained from a reputable dairy The district medical officer supplied the information that he had no knowledge of any cases of abortus infection occurring locally It is not, however, a notifiable disease The patient's family keeps a dog, a cocker spaniel, which became ill with a high temperature, vomiting, and diarrhœa about a week before the girl's present illness, and was sent to a kennel. Abortus infection in dogs is very rare, but several cases have been reported. One case in France, a bitch, caused a small domestic epidemic (Dalrymple Champneys 1929) The serum of the dog owned by the patient gave a completely negative (1 in 2 5 to 1 in 500) agglutination reaction with the *Br abortus* culture of the Oxford Standards Laboratory on two occasions The source of the infection, therefore, remains obscure

ISOLATION OF ORGANISM

In view of the difficulty which is often encountered in isolating *Br abortus* from the blood stream it may be of interest to record the method which was successful in this case —

> About 1 c cm of blood was inoculated direct into each of three screw capped bottles containing about 15 c cm of ordinary lemco broth and about ¼ c cm of Fairchild's glycerinated trypsin, two of the bottles also contained 1 per cent of glucose The bottle containing no glucose subsequently had the air in it replaced by an atmosphere containing about 10 per cent CO_2 Growth occurred in one of the bottles containing trypsinised glucose broth after about 8 days' incubation at 37° C , and two days later in the bottle containing ordinary trypsinised broth with 10 per cent CO_2 The remaining bottle of trypsinised glucose broth grew nothing after several weeks' incubation

CHARACTERISTICS

Subcultures could at first only be obtained in an atmosphere of 10 per cent CO_2, a profuse growth occurring on liver infusion agar, meagre growth on human serum enriched lemco agar, and very scanty growth on simple lemco agar Subsequently good growth occurred on ordinary agar in 10 per cent CO_2, and later growth could be obtained under aerobic conditions on liver agar, and finally on ordinary lemco agar

The organism was a small Gram negative coccobacillus, which was non motile, it produced H_2S after 24 hours' incubation, and was still producing it after 14 days on both ordinary agar and liver agar, and both aerobically and in 10 per cent CO_2

Its agglutination reactions were as follows —

Patient's organism with	Oxford abortus serum	1 in 500 Std +
	, melitensis ,,	1 in 500 Std —
	Patient s serum	1 in 250

Agglutination absorption tests, using 9 volumes of a 10,000 million per c cm suspension of the patient's organism to 1 volume of serum incubated for 18 hours at 56° C , gave the results shown below

The unabsorbed Oxford melitensis serum used in this test agglutinated the Oxford abortus culture to 1 in 250 Std — and the Oxford melitensis culture to 1 in 250, while the unabsorbed Oxford abortus serum agglutinated the Oxford abortus culture to 1 in 500 and the Oxford melitensis culture to 1 in 50

1 Absorbed Oxford melitensis serum with Oxford abortus standard culture	0
2 Absorbed Oxford melitensis serum with Oxford melitensis standard culture	1 in 50 Std —
3 Absorbed Oxford abortus serum with Oxford abortus standard culture	0
4 Absorbed Oxford abortus serum with Oxford melitensis standard culture	0

The growth limitations H_2S production agglutination and absorption reactions appear to render it certain that this organism is a true *Br abortus*

COMMENTS

The main points of interest in this case are the youth of the patient, the early diagnosis and the successful isolation from the blood stream by a method which was not originally specially designed for the purpose of isolating members of the brucella group

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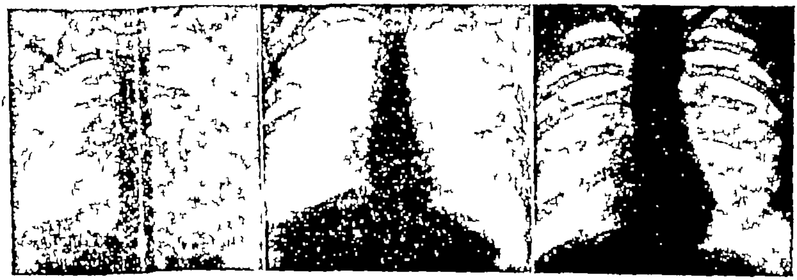
ACUTE SUPPURATIVE PERICARDITIS

By J W Macfarlane M.C M.D F R.F P S Glasg
ASSISTANT PHYSICIAN TO THE GLASGOW ROYAL INFIRMARY

It is well known that the fatality rate of purulent pericarditis, treated medically is almost 100 per cent (Bunch 1936) Shipley and Winslow (1935) reviewing their own results and those of others came to the conclusion that early operation was the only satisfactory method of treatment, but found that even if operation had been delayed there was still hope of recovery They said that aspiration may on occasion be used to give relief but has no curative value. Even in cases treated surgically the mortality rate was about 40 per cent

FIGS. 1 2 3



July 1929 September 1929 June, 1937

The following case is recorded because the patient although treated by paracentesis only made a complete recovery

A girl aged 16 was admitted to the Royal Infirmary on July 10th 1929 complaining of pain in the chest of

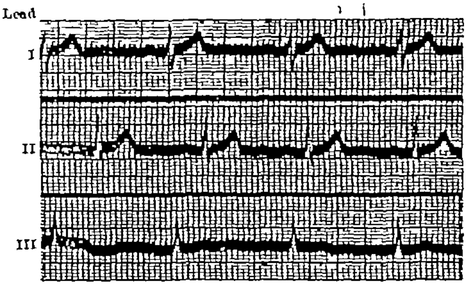


FIG 4.—Electrocardiogram showing right axial deviation

six days duration She had had measles and pneumonia in infancy but there was no history of rheumatism or chorea

Present illness—Three weeks before admission she developed cellulitis of both hands This was treated at the out patient department and several incisions were necessary These healed gradually Six days before admission she complained of pain in her chest which gradually increased in severity

On admission she looked ill and anxious was pale and perspired freely She lay on her right side and complained of severe pain in precordia Recent operation scars were seen on both hands Breathing was somewhat laboured Temp 103 2° F ; pulse-rate 130 respirations 40 The pulse was regular in force and rhythm but rapid and of poor quality The apex beat was not visible but was palpable in the 4th space in the mid clavicular line Cardiac dullness was increased on percussion, the right border being ½ in to the right of right sternal margin the upper border at the 3rd left space, and the left border ¾ in outside the midclavicular line The sounds were heard at all areas but were of poor quality Pericardial friction was heard at the left lower border of sternum. The percussion note at the left base of lung was impaired but vocal fremitus and resonance were normal no adventitious sounds Leucocyte count 12 000 per c.mm On the day after admission radiography gave no evidence of pericardial effusion

Progress and treatment—On July 14th the cardiac dullness had increased ; the right border was 1½ in *to* the right of the right sternal margin the upper border was at the 2nd rib and the left border was 1½ in outside the midclavicular line Sounds were muffled and pericardial friction had disappeared The leucocyte count was 17,200 per c.mm. Radiography showed a pericardial effusion (Fig. 1)

On July 15th Mr J A G Burton did an exploratory paracentesis and withdrew 400 c cm of purulent fluid The pathological report was "Films showed abundant polymorphs and a few Gram positive diplococci on culture a growth of *Streptococcus mucosus* (pneumococcus morphologically resembling pneumococcus type 3) was obtained" (Dr J Steven Faulds) Wassermann and Widal reactions and blood culture were all negative

On July 16th the cardiac dullness was still much increased, the right border being 2 in to the right of the right sternal margin, the upper border at the 2nd rib, and the left border 2 in outside the midclavicular line Mr Burton did a second paracentesis, and blood stained fluid and fibrin were obtained in small amount Pathological report 'A few Gram positive cocci in the direct, but no growth obtained on culture" Leucocyte count, 10,800

On July 24th the cardiac dullness was decreasing, the right border being 1 in to right of the right sternal margin, the upper border at the 2nd space, and the left border 1 in outside the midclavicular line The heart sounds were heard more distinctly and there was no friction On the 29th, however, dullness was detected on percussion at the left base and on August 1st the left chest was explored and fluid withdrawn It contained "large endothelial cells and some polymorphs in direct smear, no organisms in films or culture On August 5th free fluid was detected in the abdomen, the liver was enlarged, the lower border being 3 in below the costal margin On the 10th the right border of heart was ½ in to the right of the right sternal margin the upper border at the 3rd rib, and the left border ½ in outside the midclavicular line On August 20th the patient had a temperature of 104° F, with pain and tenderness in the right iliac fossa, and vomiting She was seen by Mr Burton, who decided not to operate, and by the 23rd the abdominal signs and symptoms had disappeared At the end of the month the heart boundaries were within normal limits, the sounds were normal and the lungs clear On Sept 10th the patient was allowed up in a chair, on the 14th radiography showed no evidence of enlargement of heart (Fig 2), and on the 17th she was dismissed to a convalescent home

For a month after leaving the home she rested as much as possible, and led a very quiet life After this, however, she did not limit her activities in any way, and led a normal life—swimming, cycling &c She is now working as a domestic servant When seen on June 16th, 1937 she was a healthy looking young woman The heart boundaries were within normal limits, and the sounds were pure and of good quality Radiography of the heart showed no enlargement (Fig 3), an electrocardiogram revealed slight right axial deviation (Fig 4)

The striking features about this case are first that recovery ensued without surgical treatment, and secondly, that the patient has recovered so completely that she is able to carry on a normal and vigorous life

One would expect that after purulent pericarditis there would almost certainly be some pericardial adhesion, and even some permanent damage to the cardiac muscle, as the result of the action of toxins In the surgically treated cases this does not happen Shipley (1936) states that of 39 patients of whom data have been published at least one year after pericardiotomy, 35 were alive and well at the time of the report, with cardiac boundaries within normal limits, one was alive with adhesive pericarditis and another had died of this condition In addition he gives details of 6 of 7 recovered cases in his own series, and none of these showed clinical evidence of disability

It appears from the case I have described that complete recovery is also possible, even when only paracentesis is used I make no claim, however, for the routine use of non surgical treatment, since the results reported by Shipley and others show clearly that early diagnosis followed by pericardiotomy offers the best chance of recovery

SUMMARY

The case history of a patient with purulent pericarditis is reported Although treated only by paracentesis she recovered Eight years later the heart shows no signs of any abnormality, and there is no evidence of any functional disability

I have to thank Dr J C Middleton for permission to publish this case

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF PSYCHIATRY

At a meeting of this section on June 29th, Dr T A Ross, the president, took the chair, and a paper on the

Influence of the Emotions on Bodily Functions

was read by Dr ERICH WITTKOWER He began by speaking of the exaggeration of materialism in medicine at the end of last century which had neglected the total personality of the patient and the relation between the patient and the physician The problem of psychosomatic inter relationships could be approached by the study of organ neuroses, by the study of the effects of organic diseases on the total personality, by the experimental production of physical alterations and other effects on the total personality and by the experimental production of psychical alterations and the observation of their effect in the physical sphere The first and last of these paths represented his own lines of work, on which he now presented an interim report

Everyone knew that respiratory changes might express emotions Most workers agreed that breathing became shallow and rapid when the patient was attentive Regular respiration coincided with a visually conceptive type of individual, and irregular breathing with an auditory type It seemed reasonable that people exposed to emotional intensity should show strong or protracted reaction on the respiratory organs These reactions might become fixated and produce the hysterical disorders of respiration Changes in the circulation under the influence of emotion were familiar During pleasant emotion the blood accumulated in the brain and periphery and during painful emotion in the abdominal organs The blood pressure might rise or fall and prolonged emotional stress might lead to true hypertension Feeling had been located in the heart since antiquity, but very little experimental work had been done on the influence of emotion on the heart A radiologist's wife had suffered from heart attacks during arguments, and one day her husband had taken a radiogram of her heart during an argument and had found that it was smaller than normal. Experiments under hypnosis had shown that the heart often changed in size by more than 1 cm during emotion

Research had been carried out on the secretion of saliva under hypnotic emotional stimulus The type of emotion had been found to be irrelevant; the change in salivary secretion depended on the individual Some people salivated under the influence of any emotion while in others the mouth became dry The result was due to change not in the quantity of saliva produced but in its composition Beaumont in 1834 had reported that the gastric secretion of Alexis St. Martin stopped whenever the man got excited G Heyer had produced psychical secretion in hypnosis and then subjected the patient to vivid emotions which always stopped secretion Dr Wittkower's experiments had shown that changes in both directions could be shown under the influence of emotion in the acidity emptying time and amount of secretion The same emotions in the same subjects caused uniform changes. The degree of reaction varied on different days but its type remained the same Different subjects reacted differently one person might have hyperacidity when disgusted another hypoacidity or hypersecretion The changes in salivary and gastric secretions were parallel Thus two types of individual could be distinguished plus and minus types differentiated by the secretory behaviour of their salivary and gastric glands under the influence of emotion These types did not coincide with the vegetative types of Eppinger and Hess but coincided with the eidetic types established by Jaensch. A radiographic study of the gastric mucosa had shown that the folds were well preserved under emotion but somewhat thrown up by movements of the wall. The tone was greatly increased so that the pylorus was drawn right up to the body Sometimes the increase of tone was so great as to cause spasm of the mucosa and a cribriform cancellous pattern which would be generally diagnosed as gastritis

Similar changes in intestinal peristalsis were produced by emotion All forms of constipation including proctostasis might have a psychoneurotic basis and refractory cases could often be greatly relieved by methods of treatment based on Yoga practice Excitement inhibited the bile flow in animals in humans joy sorrow and fear had a stimulating effect on the bile and annoyance inhibited it There were also collective changes Certain sensations in the right epigastrium after annoyance might be due to spasm of the bile-duct, and the digestion of annoyed people might follow a course similar to that seen in obstructive jaundice Psychological factors might play a part in the ætiology of jaundice and gall stones

Experiments on the kidneys showed that some people's urine underwent no changes in spite of the strongest emotion. If a change did occur several constituents were usually altered at once In some cases there was storage of uric acid others showed changes in the quantity hydrogen ion concentration chlorides and total nitrogen Experiments with the endocrine system showed a rise of the blood iodine index during emotion by 20 to 50 per cent. in 13 out of 15 subjects Iodine values were found in some patients such as were only known in Graves's disease The iodine index gradually declined to normal when the emotion faded out Work with the psychogalvanometer showed a close relationship between responsiveness and affectivity Certain test words could be found which provoked a stronger psychogalvanic reaction than others they indicated unconscious emotions It was conceivable that a psychodiagnostic method could be developed

It was obvious from the experiments that emotion was accompanied by severe disturbances of every bodily function and that emotional stress might lead to functional disturbance and even ultimately to definite organic changes There was no clear-cut differentiation between organic and psychological disease. Further investigations were in progress

DISCUSSION

The PRESIDENT declared that this doctrine should be preached to the Sections of Medicine and Surgery, where it would have a more educative effect than in a section whose members were already converted Practitioners often accepted a high blood pressure reading as evidence of organic disorder when it was really due to apprehension caused by the test itself So many cases of indigestion were cured by psychotherapy that an enormous number might appear to be due to neurosis The recent German observations cited to show that gastritis was the usual cause were to all intents and purposes worthless W C Alvarez, who had started his scientific life as an organicistic physician, had declared his belief after thirty years research that by far the most frequent cause of all dyspepsia was neurosis

Dr C P BLACKER asked about the basis of selection of the subjects how the emotions were induced under hypnosis and whether any significant difference had been detected in the reactions of patients of different age and sex

Dr R TRAVERS SMITH suggested that the reason why many subjects reacted in the same way to different types of emotion might be that the current coinage of so many emotions was anxiety He asked whether the manifestations of emotion were the same in conscious as in unconscious patients also to what extent the experiment itself caused the emotion The mere passing of a stomach tube he suggested was to some persons a very emotional situation, as was the exercise-tolerance test to many patients with bad hearts. Patients homely descriptions of subjective experience—e.g my heart leapt I will take it to heart —might have a real physiological basis which should be investigated

Prof DAVID SLIGHT (Chicago) mentioned the difficulty of quantitative measurement, and referred to recent experiments in which he and his colleagues had been able to modify the brain tensions of subjects under hypnosis and reverse their physiological effect The suggestion of various stimuli, such as light, had produced physiological reactions similar to those of the real stimuli. Emotion produced very few changes in the electrocardiogram he had noted some inversions of the P wave in the first lead and one doubtful inversion of the T wave in the first lead In their imagery of subjective emotion poets had perhaps been in advance of physicians The psycho galvanic reflex, or galvanic skin response was certainly an index of change in the emotional system but was unfortunately almost too sensitive it would sometimes react strongly to a cough. Its use in the study of emotions was very limited After conditioning the response the results he had obtained were closely correlated with the four types which Pavlov had discovered in dogs

Dr W M HEWETSON narrated an instance of apprehension causing a suspected poacher acute thirst. The present work showed he said the beginning of a connexion between psychology and organic medicine As a fairly experienced general practitioner one of his objections to psychology—particularly to Freud's entities—had been that it seemed to have no connexion with organic medicine The Adlerian system had a connexion but only a theoretical one In pharmacology many drugs (e g quinine) appeared to produce contradictory reactions, probably because of their long distance effect, which was the more important but little recognised Similarly, in the study of emotion the immediate results might be confusing and the long distance results be the ones which would most repay investigation Harvey Cushing, in his work on disorders of the pituitary and other glands, had mentioned three cases of brain tumour associated with acute gastric ulcers, two of which had perforated shortly after operation on the brain The theory had been formed that the intervention had affected the hypothalamus, which was believed to be closely connected with the emotions At the conclusion of his four lectures Cushing had said that the wide incidence of gastric ulcer to day was probably due to excessive worry and tobacco

Dr R A NOBLE remarked that many patients who had been detained in hospital on suspicion of goitre and discharged with a report by the research unit of sympathetic over activity went to the psychiatrist with no mention of any psychiatric phenomena in their history He had recently observed a number of very neurotic patients suffering from pernicious anæmia, and he inquired whether Dr Wittkower had observed any connexion between the two conditions

Dr D N HARDCASTLE, referring to a case of Dr Wittkower's in which diarrhœa had followed emotional disturbance in six members of a family tree, all females, asked whether there was any difference between the two sexes in reaction to emotional disturbance

Dr G R A RUDOLF said that fear could be caused by a large dose of adrenaline, between 7 and 15 minims, beneath the skin The effect of adrenaline on the blood pressure of cats varied with the hydrogen-ion concentration of the blood The *pH* of the blood might be linked with excessive gastric secretion

Dr C C CHESTERMAN observed that among primitive Bantus, who quickly exteriorised their emotions, major manifestations of hysteria were common, but psychoneurosis and gastric and duodenal ulcer were very rare and Graves's disease was probably never found Hypertension was never seen except in persons who had had syphilis, nor was there any "disordered action of the heart" In some cases of diabetes he had suspected association with instability of the nervous system

Dr A T M WILSON recalled that a surgeon of his acquaintance had tolerated intravenous injections of 30 c cm of adrenaline without any effect Drugs varied enormously in their action on individuals, and much pharmacology might be founded on false premises

Dr LETITIA FAIRFIELD suggested that, where women were found to suffer more than men from neurosis in the same occupation, the men might escape through the greater freedom to express their irritation which convention allowed them Hyperemesis gravidarum had formerly been attributed to neurotic disorder but was now regarded almost entirely as a symptom of metabolic disturbance of pregnancy The pendulum might have swung too far in the physical direction, as in the attitude to many other diseases, and an effort should be made to link up the two ætiologies

Dr MARGARET LOWENFELD gave some remarkable instances in which deep-seated psychological disturbance in children had been reflected in physical symptoms such as constipation and diarrhœa, which had disappeared after appropriate psychotherapy Such cases suggested that buried fears might bring about organic changes in the tissues She considered that the experimental procedure would generally produce in children an emotional reaction so severe as hopelessly to confuse the picture

Dr WITTKOWER, in reply, said that he had experimented on volunteer patients who had been successfully treated by psychotherapy and on students Emotions could easily be produced under hypnosis on patients whose history the worker knew An interval was always given to allow the emotional reaction caused by the experimental technique to subside, and in any event the technique could not affect a hypnotised person Bile had been withdrawn through a duodenal sound Emotions produced a considerable increase in the leucocyte count

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

A MEETING of this society was held in Newcastle upon Tyne on June 11th, with Dr J W BRIDE, the president, in the chair

Ovarian Extroversion for Secondary Amenorrhœa

Dr K. V BAILEY (Manchester) gave a further account of the operation he first described to the society nearly eighteen months ago (see *Lancet*, 1936, i, 315) Its object was to restore the function of cystic or cirrhotic ovaries by facilitating the approach of follicles to the surface A wedge, having its base at the periphery, was excised sagittally from the ovary, its apex being carried down through the region of the hilum Sutures were then passed to the ovary in such a way as to turn the cut edges of the ovary partially inside out Of 17 patients he had operated on, 13 had begun to menstruate again immediately after the operation, and there were 4 failures Unscientific optimism had now replaced unreasonable scepticism with regard to treatment with endocrine extracts, but he believed that this should be tried first in all cases of secondary amenorrhœa When it had failed extroversion of the ovaries should be carried out provided the patient realised that success could not be guaranteed The regularity with which menstruation had followed operation in most of his cases strongly suggested ovulation from ovaries which at operation certainly showed no recent or remote evidence of it Proof of such ovulation had not been forthcoming however until one of the patients—who had had 2½ years' amenorrhœa and showed no trace of a corpus luteum in either ovary at operation—became pregnant seven months ago In this case regular menstruation began 5 weeks after operation, and continued at regular intervals of 4–5 weeks for two years until the advent of the present pregnancy, without endocrine assistance In this case it was certain that ovulation had taken place recently, and it seemed fair to assume that it had also occurred on other occasions since the operation Some regular stimulus to menstruation had evidently been present here (as in the other successful cases) which had not been present before the operation In Dr Bailey's opinion this stimulus was ovulation, but this could not of course be proved unless pregnancy followed While recognising the inadvisability of performing laparotomy without thorough trial of treatment along general and endocrine lines, he regarded the operation as certainly justifiable, both to restore normal menstruation and to improve the prospects of pregnancy, provided that all concerned were aware that success could be expected in only three quarters of the cases

Mr **Harvey Evers** said that in his experience cystic ovaries were rare in secondary amenorrhœa He mentioned a case in which a whole year of endocrine therapy had been necessary to produce a period The patient then became pregnant almost at once, and a year after the first confinement she had another baby

Dr J W A. **Hunter** (Manchester) congratulated Dr Bailey He thought it disappointing that a surgical method could get better results than endocrine treatment He asked whether in the cases treated the amenorrhœa was due to pituitary or to ovarian deficiency He could not see how an ovarian operation could affect a pituitary deficiency Had any of the patients developed dysmenorrhœa and had the basal metabolic rate been taken? It would be useful if such cases could be thoroughly investigated before and after operation.

Dr **Bailey** said that the risk of the operation was small, with little bleeding at the time he always investigated for adhesions subsequently In most of his series he had been able to feel cystic ovaries The basal metabolic rate and examination of endometrium had not been carried out, for all but two of the patients had been operated on before the publication of Kaufmann s paper on the endocrine treatment of this condition In his opinion secondary amenorrhœa was usually due to primary ovarian deficiency or insensitivity of the ovary or uterus to pituitary stimulus He agreed with Dr Hunter about the indiscriminate use of the operation. That was why he had been sixteen months considering his cases before reading his second paper The operation should not be done except as a last resort

Prontosil in Obstetrics

Mr **Bryan Williams** (Liverpool), in a note on the use of prontosil in obstetrics said he had given the drug in established cases of puerperal or post abortum infection, and also as a prophylactic Most of his patients had had it both by mouth and by injection but as it had been shown that Prontosil Soluble exerted its bactericidal effect in the body only after being changed into sulphanilamide which was quickly absorbed by mouth injection would probably prove unnecessary Up to date he had used prontosil in 53 cases in 23 of which a hæmolytic streptococcus was not isolated Of these 23 8 were local uterine infections 4 were infections involving the pelvic peritoneum and 8 were extrapelvic infections The remaining 3 patients who died had ulcerative endocarditis lobar pneumonia and a pelvic abscess In analysing the 30 cases in which hæmolytic streptococcus was obtained he used a classification similar to that adopted by Colebrook and Kenny

Group 1—In 13 cases the infection was limited to perineum vagina or uterus In none of them was there any extension of the infection or suppuration during treatment In one case a phlebitis of the leg developed There were no other complications and no deaths

Group 2.—In 7 cases the pelvic peritoneum was involved. In 2 of them vaginal drainage was carried out but in all the others the inflammation subsided. There were no deaths.

Group 3 comprised 10 cases of septicæmia or general peritonitis or both In 8 a positive blood culture was obtained In one of those in which organisms were not found in the blood the post mortem signs of a septicæmia were present and in the other there were clinical signs of general peritonitis Of the 4 cases which recovered 2 subsided without any complication the third developed pelvic cellulitis, and the fourth white leg There were 0 deaths the periods between admission and death in 5 of the cases being thirty seven hours forty-eight hours seven days, eight days and forty nine days The remaining case was one of delayed chloroform poisoning with signs suggesting general peritonitis

Thus among the 30 cases of hæmolytic streptococcal infection there were 6 deaths—i.e 20 per cent Colebrook and Kenny gave the mortality at Queen Charlotte s Hospital before the introduction of prontosil as between 16 6 per cent and 31 6 per cent After prontosil was introduced they published 64 cases with a mortality rate of 4 7 per cent Among the 10 cases of streptococcal septicæmia there were 6 deaths (60 per cent) the corresponding fatality rate among 36 cases treated without prontosil (1034–36) being 86 per cent. The dosage used had been small compared with that recommended elsewhere and he felt that one or two of the patients might have been alive now had bigger doses been given The great tragedy about these drugs was that they had been introduced into practice without adequate clinical controls, and now that they had met with success, no one had the courage not to use them Furthermore there was strong evidence that the virulence of puerperal sepsis was decreasing This evidence had come from both London and Sheffield

In using prontosil for prophylaxis he had given it to each alternate case of the same operative procedure each patient receiving about 63 tablets or 19·0 grammes of the drug Toxic effects had been very rare in the septic cases, but seemed commoner when the drug was given for prophylaxis There had been one death in a patient admitted during pregnancy with advanced heart failure from mitral stenosis prontosil had been given prophylactically but had apparently caused cyanosis and was discontinued the patient died ten days after delivery Vomiting had occurred in a few cases but no signs of kidney irritation had been observed Cyanosis had been the only disturbing feature it developed in 16 per cent. of cases but in only one of them was it persistent and in this case magnesium sulphate had been given Mr Williams found little difference between the incidence of morbidity in the treated cases and in the controls but noted that all the serious cases were among the controls In no case receiving prontosil had a hæmolytic streptococcus been isolated and he thought the evidence was in favour of prontosil protecting against infection with this organism If this was true it was the biggest advance in obstetrics since the days of Semmelweis for the hæmolytic streptococcus was responsible for 70–95 per cent. of maternal deaths due to sepsis

Discussion of this paper was postponed until the society s autumn meeting

Mr T F **Todd** (Manchester) read a note on the Relief of Pain in Pelvic Malignancy Prof **Farquhar Murray** read a paper on the Evolution of the Emergency Service; and Dr **William Hunter** reported cases of ruptured uterus and prolapse of the cord.

National Radium Trust—Viscount Halifax presided at a meeting of the trust on June 28th when plans were reviewed for making available a further substantial amount of radium Lord Donoughmore was reappointed chairman of the Radium Commission and Mr R Stanton was appointed secretary of the trust in place of Mr George North resigned

New Furness Hospital—A new hospital is to be erected at Ulverston by the Lancashire county council at a cost of £75 000 Money in a local fund started to provide a new hospital will be added to the proceeds of the sale of the present cottage hospital site

REVIEWS AND NOTICES OF BOOKS

Preoperative and Postoperative Treatment

By Robert L Mason, M D , F A C S , Assistant in Surgery at the Massachusetts General Hospital. London W B Saunders Company 1937 Pp 495 25s

This is an excellent book, combining practical wisdom with sound theory, and giving adequate consideration to the application of biochemistry to therapeutics In its preparation Dr Mason has had the assistance of twelve colleagues who have contributed chapters on subjects to which they have devoted special attention, and a uniformly high standard in many special branches is thus achieved The references to the literature are up to date and well chosen The most notable feature is the emphasis laid upon the adjustment of water balance, and the control of the sugar and salt content as well as the reaction of the blood before and after operation These matters are of such importance for the proper function of every tissue in the body, and are so often upset both by the patient's disease and by the surgical procedures adopted for its relief, that they must form the basis of rational treatment

As our knowledge increases, however, we should take care not to become meddlesome A patient who is well prepared for operation should seldom require elaborate after treatment, and simplicity should be the guiding principle, especially in the patient's own interest In the after treatment of operation for toxic goitre, for example, subcutaneous salines should not in our view be used as a routine, and an oxygen tent is not the only method of cooling a patient—a cradle and a fan often work wonders Again, it is not clear whether the authors realise that insulin is needed rather than sugar to stabilise carbohydrate metabolism after an operation These, however, are matters of detail, and do not detract from the usefulness of a book which should be studied by everyone who undertakes the care of surgical cases

Human Physiology A Practical Course

Second edition. By C G Douglas, C M.G , M C , D.M , F R S , Fellow of St John's College, Oxford , and J G Priestley M C , D M., Reader in Clinical Physiology, University of Oxford. Oxford Clarendon Press (Humphrey Milford) 1937 Pp 229 12s 6d

To the authors of this book belongs the distinction of having introduced the idea of a course of practical physiology devoted exclusively to experiments on the human subject Unlike most practical manuals based on the teaching in a particular laboratory, the book has become a modern classic In this new edition its general form remains unchanged The presentation is scholarly but not pedantic, and the instructions are precise without being abrupt No student can read a chapter without learning a great deal more than the mere facts which it presents, for every step is reasoned and the importance of thinking correctly as well as performing carefully is made unmistakable The experiments deal with respiration, the blood and circulation, the kidneys and the alimentary canal. The section on blood has been more radically altered than the others, but these have all been brought up to date and contain many additions of clinical importance, such as sugar tolerance tests, urea clearance tests, and tests for carbon monoxide poisoning The importance of carbon dioxide as a therapeutic agent is also emphasised. The book as a whole, however, is designed to give an insight into the ways and means available for investigating the functions of the human body and to inculcate the importance of careful interpretation It has features which appeal both to the pure scientist and to the student of medicine The publishers have modernised the paper and printing, and this is a definite improvement

Practitioner's Library of Medicine and Surgery

Vol XII, Preventive Medicine and Hygiene Supervising Editor, George Blumer, M A , M D , David P Smith Clinical Professor of Medicine, Yale University Associate Editor, Ira V Hiscock, M.A , C P H , Professor of Public Health, Yale University London D Appleton Century Co 1937 Pp 993 50s (in sets only)

This is the final volume (with the exception of the index and supplement) of an encyclopædia of medicine emanating from Yale University for the use of American practitioners The preface suggests that this last volume ought to have been the first, for it claims, what is truer in theory than in practice, that "the shift of emphasis in practical medicine has been from treatment to prevention "

The division between private and public practitioners is much less sharp in America, where most medical officers of health are part time officials, than in Britain, and this volume is less specialised and more generally informative than most of our text books on hygiene It can best be described as a field physiology, the application of biological science to the management of healthy and diseased man Less than 100 of the 993 pages are devoted to sanitary science, and vital statistics and public health law are barely mentioned Personal hygiene is dealt with fully and convincingly, and the notes on prevention of disease are extended to cover the widest field Most of the authors favour periodical medical inspection at all ages and include early recognition of disease as part of its prevention, so classing as preventable every disease curable at any stage Several of the chapters, such as Prevention of Endocrine Disorders by E Kost Shelton, and Prevention of Diseases of the Genital Tract by Clyde L Deming, are works of general medicine and surgery, not strictly within the province of hygiene and preventive medicine In these and other chapters, clinical symptoms, diagnosis, and treatment are detailed, but biological speculations are unmentioned. Bearing in mind that the work is addressed to practitioners of medicine who may practise prevention and not to specialists in epidemiology and hygiene, this method of approaching prevention through clinical medicine has much in its favour, but it does not give the true philosophy of modern preventive medicine In places there is dogmatism which is unhelpful Thus, of chicken pox we are told "The period of communicability lasts until the crusts have disappeared from the skin and mucous membrane In most cases this does not extend over seven days after the onset of the fever "

The chief drawback of the work is its insularity, it is too obviously written by Americans for Americans Its great recommendation is that it does bring preventive medicine to the interest and understanding of all medical practitioners Bibliographies at the end of each chapter give references almost exclusively to American authors, though the volume starts with a quotation from Sir George Newman The volume is well printed and well bound but it weighs nearly six pounds

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Handbook of Orthopedic Surgery

By A. R SHANDS Jr M.D Associate Professor of Orthopedic Surgery Duke University School of Medicine, North Carolina; and R B RANEY Instructor in Orthopedic Surgery at the School. London Henry Kimpton 1937 Pp 593 21s

SOME time ago the American Orthopedic Association appointed a committee to consider the question of undergraduate instruction in orthopædic surgery The difficulty there as here is to obtain a correct balance between the hours given to teaching in the major departments and to those allotted to the special departments—at a time when the curriculum is becoming progressively more unwieldy Dr Shands, having noted that the committee recommended twenty four periods of one hour for covering all that the student should know about orthopædics has divided his text book into twenty four sections But does he honestly believe that the brightest student can ever with the help of this book swallow the whole subject in twenty four big gulps? It cannot be done and for this reason a book of nearly 600 pages, however well written must for the student with limited time fail in its primary purpose. In the undergraduate period it is not possible to teach more than methods of examination and diagnosis and the broad principles of treatment

Dr Shands deals with each group of diseases in turn in the usual fashion and he has done well in avoiding the use of eponymous terms for which orthopædic surgeons appear to cherish a special affection We miss however that insistence on principles which British surgeons have come to associate with the teachings of Hugh Owen Thomas and Robert Jones. It is only fair to say that we know of no text-book of orthopædics in which principles of treatment are given their true importance The nearest recent approach to such a work, in a very limited field, is perhaps Calvé's monograph on surgical tuberculosis. Dr Shands's illustrations are novel enough, being all drawings This is the more astonishing since American publications have long been noted for their superb photographic reproductions the revival here of nineteenth century methods is on the whole disappointing

The man who has passed his finals will find this book readable and instructive, though he must beware of the occasional error such as the drawing on page 360 of a case of vertebral osteochondritis. There could hardly be a more misleading picture so much so that one questions the accuracy of the drawing or the diagnosis.

Hautdesinfektions Probleme

By JÖRGEN ERNST Copenhagen: Levin and Munksgaard. 1937 Pp 175 Kr 10

IN 1935 the University of Copenhagen offered a prize for an essay on skin sterilisation. The gold medal was awarded to Jörgen Ernst who has now published in book form the series of controlled experiments which formed the basis of his work. He first set himself to determine the effects of frequent application of various disinfectants on the bacterial flora of the hands of medical students and nurses working in the wards of Danish obstetrical institutions under ordinary conditions. Another question to be answered was whether such frequent disinfection would eventually lower resistance and result in the growth of an increasing number of colonies on culture This effect was not observed even where some eczematous changes had begun to make their appearance. Only when spirit soap—spiritus saponis kalinus—was used continuously was there an increase in the number of colonies on culture. A single washing and the application of an antiseptic was not found sufficient to sterilise or greatly to reduce the number of colonies of bacteria grown in cultures and effective disinfection was in most cases achieved only on the third day It follows that more than usual care must be exercised by those who have just joined surgical or obstetrical units. The most potent agent for disinfection purposes was found to be 1–1000 sublimate solution in water Unfortunately it was also the most irritating, and several of the subjects tested developed a mild degree of dermatitis and had to be excluded from the experiments Disinfection by 70 per cent and 90 per cent. alcohol after scrubbing with soap and water is the subject of special discussion and is on the whole the most favoured method. It would appear that excessive scrubbing is unnecessary and superfluous as the number of colonies grown was not notably diminished thereby

Ernst maintains that infection of the hands can be auto as well as hetero genic. Two of the subjects of an experiment developed a greatly increased bacterial flora of the hands—one after expression of a tonsillar plug which contained the same organisms, and another in association with a septic or "hospital throat The moral is not here drawn but the observation clearly confirms the inadvisability of allowing persons with such infections to operate or assist at operations or to conduct labour The commonest bacterial flora cultured from the hands examined was staphylococci, and the cultures obtained were found to vary in different persons, both as regards their number and in their degrees of pathogenicity Other organisms, notably the streptococci were absent and although *B subtilis* *B proteus* and *B pyocyaneus* provided occasional colonies it is unlikely that any pathological effects would have followed their implantation.

These comments reflect but a small portion of the information which Dr Ernst has laboriously tabulated. He has done a signal service by collecting and by interpreting it with such wise reservations

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Trial of Buck Ruxton

Edited by R H BLUNDELL, Barrister-at-Law and G HASWELL WILSON M D Professor of Pathology at the University of Birmingham London Wm Hodge and Co 1937 Pp 457 10s 6d

IN May 1936 Dr Buck Ruxton was hanged at Manchester for the murder of his wife His case aptly edited and documented has quickly found its way into the Notable British Trials series The facts will still be fresh in the public memory Parts of the victim's body disarticulated with surgical skill and with the obvious intent to defeat identification were discovered in a ravine near the main road from Moffat to Edinburgh on Sept 29th, 1935 together with parts of another female body The latter proved to be that of Mary Rogerson nursemaid to Ruxton's children The two women had been missing for a fortnight In his frenzied attempt to cover up his tracks the murderer made many crude errors There were the blood-stained carpets and clothing at his house in Lancaster the recognisable garments wrapped round the human remnants in the ravine the false statements about the women's movements and the utter failure to explain their disappearance or to obtain corroboration of their departure These matters would have been fatal to the prospect of acquittal even without the medico legal evidence There was a patient reconstruction of the bodies by a team of Scottish experts Anatomy and dentistry made their contribution Witnesses like Prof J C Brash and Prof Sidney Smith of Edinburgh and Prof John Glaister of Glasgow helped to build up a case for the Crown which the defence could not hope to rebut The editors publish in appendices to their volume the important reports of these experts Overwhelming in its temperate statement and in its fairness, this testimony was conclusive On its legal side the trial raised a question of the admission of evidence possibly irrelevant because concerned with a crime not before the jury Ruxton was tried and found guilty on an indictment for murdering his wife There was a second and separate indictment, not proceeded with, for murdering Mary Rogerson Normally a jury must not be given any chance to think a prisoner guilty of one crime because he is accused of another Strictly, any evidence of the murder of Mary Rogerson would be inadmissible on the indictment for murdering Mrs Ruxton The Crown, however, submitted evidence of Mary Rogerson's clothing Prosecuting counsel referred to the circumstances of her death, the garments which helped to identify her as having been in a particular place on a particular day, her disappearance from the house on the same day as Mrs Ruxton, and finally the intermingling of their remains in the same parcel, the identification of one body, he contended, must be admissible as contributing to the identification of the other Mr Justice Singleton admitted the evidence while warning the jury that the trial solely concerned the death of Mrs Ruxton

The joint editors of the book, a barrister and a professor of pathology, tell the story soberly without extravagance of sentiment or drama Their introduction mentions that the original form of Buck Ruxton's name (changed by deed poll) was Bukhtyar Rustanji Ratanji Hakim, and that the dead woman known as Mrs Ruxton had not in fact been married to him The editors offer a brief but interesting speculation on the history of the Cyclopean eye, not demonstrably human, which was discovered during the search in the ravine There is apparently no reference to any inquest on the remains of the women's bodies Did no coroner hold an inquisition before burial ? Or did Mr Justice Singleton, by virtue of his inherent jurisdiction as a High Court judge and acting *super visum corporis*, perform the function of coroner to avoid further publicity in the story of Buck Ruxton's ghastly crime ?

GENERAL REGISTER OFFICE

It seems a far cry from clandestine marriages by disreputable clergymen and from the growing grievances of rising nonconformist bodies to the present science of vital statistics, but the documents now being exhibited at Somerset House and the brochure[1] issued in connexion with this exhibition show that it was largely these two factors which led to the foundation of the General Register Office a hundred years ago During the first half of the eighteenth century an extensive traffic arose in irregular though legally valid marriages in connexion with the Fleet and King's Bench Prisons, with the Mint in Southwark and the May Fair Chapel This traffic is illustrated at Somerset House by entries in the registers of Ashwell, Gainham (the "Bishop of Hell") and others of their kidney The majority of these marriages were not perpetrated in a place of worship at all but in taverns and brandy shops in the neighbourhood, of which "Mrs Silver's Brandy Shop, the Harrow and Dunghill" seems to have been a well named example or in private houses kept as "marriage shops' and no effort appears to have been made to determine the competence of the parties to marry even the names of the bride and bridegroom often being omitted from the registers To remedy this disgraceful state of affairs Lord Hardwicke's Act of 1753 laid it down that a marriage to be valid must be performed in a church by a clergyman of the Church of England, Jews and Quakers alone being exempted This Act led to an understandable and increasing grievance on the part of nonconformists, which successive governments attempted to remedy, but actually the bar to nonconformist marriages was not finally removed until 1837

A third factor which led to the passing of the Registration and Marriage Acts of 1836 was the lack of any satisfactory system of registration of births, marriages, and deaths Parochial registration of baptisms and burials had been introduced by Thomas Cromwell in 1538, but this included only members of the Church of England and nonconformist bodies kept their own registers The increase in the numbers and importance of these bodies in the seventeenth and eighteenth centuries rendered the parochial system less and less complete, and the absence of legal validity of the nonconformist registers seemed more and more unjust, especially as these latter were often most conscientiously kept, as the examples now on view clearly show The demand for a central and uniform system of registration ultimately led to the appointment in 1833 of a select committee of the House of Commons, which reported in favour of State registration of births, marriages, and deaths, to be performed by lay registrars with a "General National Office" In 1836 the Registration and Marriage Acts were passed, creating a service of local registrars supervised by a Registrar General, and giving legal validity to the religious marriages of any denomination and to civil marriages in the local register office These Acts came into force on July 1st, 1837, when the General Register Office may be said to have begun its official existence

In addition to its function of registration, the General Register Office also took over the supervision of the Census enumerations, the first four of which, taken in 1801, 1811, 1821, and 1831, had been carried out by the parish overseers with the help of local church and other officials The magnitude of this task at the present day is illustrated by the exhibition of one volume of the 1931 returns, and the brochure states that there are 31,322 such volumes, weighing some 180 tons

At its foundation the General Register Office was fortunate and wise enough to obtain the services of William Farr, who was responsible for the statistical abstracts of the Department for the incredible period of 40 years, until his retirement in 1879 at the age of 72 The subject of vital statistics does not unfortunately, lend itself to illustration in a concrete form and of this branch of the Department's activities the brochure can only advise *si monumentum requiris, circumspice* in any library where its publications are displayed

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[1] The Story of the General Register Office and its Origins from 1538 to 1937 H.M Stationery Office Pp 30 6d

THE LANCET

LONDON SATURDAY JULY 10, 1937

DIGESTIVE TROUBLES OF OMNIBUS WORKERS

Before initiating investigations of the incidence of sickness from particular causes in industries a subject on which controversial views are inevitable, the Industrial Health Research Board adopt a sound procedure They set up a special committee to determine the best means of carrying out the inquiry and upon this committee are represented in equal numbers the employers and the employees in the industry concerned To these are added a number of scientific workers representing the statistical committee of the Medical Research Council and the Industrial Health Research Board itself The advice of the industrial members ensures that when the inquiry is planned due weight is given to factors which from their intimate knowledge of the industry they hold to be important The advice of the expert members ensures that the inquiry is carried out strictly in accordance with scientific requirements and that the report finally drawn up is impartial. This procedure has apparently worked with smoothness and success three times in the past and has resulted in reports of great value to particular industries It was applied to the problems of cotton weaving operatives in Lancashire in factories using some method of artificial humidification[1] to that of the relatively and curiously high death rates of printing operatives from tuberculosis[2] and to the investigation of the liability to respiratory diseases of workers employed in the preliminary processes of cotton spinning mills[3] This is known as cardroom workers asthma and since the issue of that and subsequent reports a departmental committee has been appointed to consider the question of compensation

Three years ago a similar type of problem was placed before the Board—namely the alleged excess of gastric illness amongst omnibus workers It is now well known that these workers believe themselves to be particularly liable to such illnesses and one or two appeals to statistics have appeared in print There had however been no adequate study of the busmen s claim and the Industrial Health Research Board believed such an investigation to be fully justified With this view the London Passenger Transport Board and the Trade Union of Transport and General Workers were in agreement. A special committee was accordingly set up composed of three representatives from the Transport Board three from the Trade Union and three scientific members Mr A **Bradford Hill** D.Sc who was responsible for the previous inquiries into sickness incidence made by the Board was appointed secretary to the committee, and has carried out the inquiry for it His report, unanimously accepted by the committee has now been published and its principal features are set out on p 97 His main conclusion is that there was, in 1933–35 some excess of gastric illness recorded among omnibus workers as compared with the tramway workers chosen as a control group Acting no doubt, on the committee s decision to ignore the problem of causation until the question of incidence had been investigated, Dr **Hill** makes no comment upon his results but states clearly and concisely what he has found It might be argued that since at the ages at which the gastric sickness is relatively high the total sickness of the omnibus workers is not high, there is therefore little need for concern On the other hand, it may be that the total sickness experience is favourable because the omnibus workers at the younger ages are a selected body of physically fit men, that the relative excess of particular forms of sickness is therefore the more important and that the apparent deterioration in the health of the men with age is the result of a more onerous occupational environment It is interesting to note as perhaps having some bearing on causation that the sickness incidence on the tramway drivers both from all causes and from gastric causes differed but little from that on the tramway conductors The omnibus conductors had a distinctly more unfavourable incidence than the omnibus drivers both from all causes and from gastric causes

It is however made clear in the report that the difficulty of interpreting a recorded sickness rate which is the end result of many influences is enhanced when it comes to investigating common everyday illnesses in which the same terms may be used as a cloak for a number of ill-defined complaints The report is quite likely to arouse more controversy than it settles At any rate the Board have good reason for their belief that this inquiry with its numerically large mass of data forms a valuable contribution to the question at issue The fact that the Board were able to make an investigation with the coöperation of both employers and employees before the question became a matter of public controversy is a feather in their cap and they have been particularly fortunate in having Dr **Bradford Hill** to conduct the inquiry

TRYPANOSOMIASIS AND CHEMOTHERAPY

As recently as the beginning of this century no drug was known that would arrest the progress of sleeping sickness In 1905 H W **Thomas** working at the Runcorn research laboratory of the Liverpool School of Tropical Medicine suggested the therapeutic trial of the French proprietary arsenical Atoxyl which he had found to have a remarkably trypanocidal action on experimental infections of mice with *Trypanosoma gambiense* This suggestion not only offered a new hope but may be said to have given rise to a new industry , for **Ehrlich** having examined Thomas's results in Runcorn, returned to Germany and began his great work on the production of arsenicals for the treatment of sleeping-sickness and syphilis, and in so doing established the foundations of modern synthetic drug manufacture The new arsenicals, however, were not without serious defects Even in moderate doses they often proved highly toxic, their therapeutic action was uncertain in the later stages of the disease and when they failed to cure they readily gave rise to arsenic-resistant strains of trypanosomes, and they were impotent against all stages of infection with *T rhodesiense* It was in 1920 that Haendel and Joetten reported on an entirely different trypanocide, Bayer 205 This remarkable product, containing no arsenic, proved to have an astonishingly powerful action on both *T gambiense* and *T rhodesiense*, but unfortunately experience showed that it would not bring about cure in the later stages of sleeping sickness—probably because it has a low diffusibility into nervous tissue In the following year L Pearce of the Rockefeller Institute showed that the new pentavalent arsenical, Tryparsamide, just discovered by Jacobs and Heidelberger, had a curative power in the later stages of Gambian sleeping sickness very definitely greater than that of the older arsenicals Experience confirmed this claim, but in other respects this drug has the disadvantages of its forerunners Since that time the search for improved compounds has continued, and recent additions to the arsenical armamentarium include the French preparation, Orsanine, described by Fourneau and his collaborators in 1923, and the English compound, Neocryl, prepared by Morgan and Walton in 1931, and introduced into therapeutics by Yorke and Murgatroyd[1]

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[1] Industr Hlth Res Bd 1927 London No 48

[2] Industr Hlth Res Bd 1929 London No 54

[3] Industr Hlth Res. Bd 1930 London No 59

Hitherto the steps taken to estimate the value of new trypanocides have been as follows First their action is tested against experimental infections in small laboratory animals in which trypanosomiasis is a readily observed septicæmia Drugs emerging successfully from this first examination are then tested against experimental infections in larger animals in which the disease is a tissue infection resembling human trypanosomiasis Finally the more promising compounds are submitted to the crucial test against natural infections of man Since Bayer 205 is extraordinarily effective in the earlier stages of sleeping-sickness the search for new trypanocides has narrowed to the production of compounds that are equally sure and certain in the later stages Those concerned in the search will therefore be interested in a method of estimating the efficiency of drugs used for syphilis or trypanosomiasis of the central nervous system that has lately been described by Hawking, Hennelly, and Quastel[2] of the Cardiff City Mental Hospital At intervals after the administration of various arsenicals to man these workers withdrew cerebro spinal fluid and estimated its power to kill trypanosomes in vitro by means of the technique devised by Yorke and Murgatroyd Simultaneous chemical determinations were also made of the total arsenic content of the fluids It was found that after administration of 3 0 grammes of tryparsamide the total arsenic content of the cerebro spinal fluid, measured chemically, is at a maximum after 14 hours and falls off rapidly during the next 40 hours, whereas the trypanocidal power, measured biologically, while considerable at 14 hours reached its maximum in 40 hours and became almost inappreciable after 80 hours At its peak the trypanocidal titre was such that the fluid diluted on an average 4–8 times and occasionally 16–32 times killed trypanosomes in vitro within 24 hours Now tryparsamide is relatively inert in vitro, and if all the arsenic had been present as tryparsamide it could have had no effect upon the trypanosomes Yorke and Murgatroyd[3] have adduced evidence that the pentavalent arsenicals owe their therapeutic activity to their reduction to the trivalent form, and Hawking, Hennelly, and Quastel conclude therefore that the trypanocidal activity found in the cerebrospinal fluid after administration of tryparsamide is due to the reduction of the pentavalent arsenic of the tryparsamide to the active trivalent form, and on somewhat slender evidence they suggest that the active compound is derived from reductions occurring in the brain itself The trypanocidal activity of the cerebro spinal fluid bears no definite relationship to the total quantity of arsenic in it, which indicates that the ratio of arsenic present in the trypanocidal trivalent form to the total arsenic present varies from patient to patient (ranging, they find, from 25 per cent to 1 per cent) After administration of orsanine similar effects were observed, but the power of this drug to render the cerebro spinal fluid trypanocidal seemed as great as, if not greater than, that of tryparsamide This appeared to be due not to its greater penetration but to the larger proportion that was reduced to the active form On the other hand, the trypanocidal titre of the fluid after administration of neocryl was but slight, and since, judging by the total arsenic determinations, this compound reaches the brain, the investigators assume that it fails to be converted into the trypanocidally active condition. This is noteworthy because Yorke, Murgatroyd, and others[1] found neocryl apparently beneficial in neurosyphilis, and Lester[1] reported definite improvement in 12 cases of Nigerian sleeping sickness treated with the drug Murgatroyd has since confirmed this initially beneficial effect in a large number of cases of Gambian sleeping sickness The explanation of the discrepancy between the laboratory and clinical indications is not obvious It may be that the original clinical benefits will not be sustained, but it is too early yet to express an opinion on this In Hawking, Hennelly, and Quastel's experiments none of the arsenobenzols examined had an activity in the spinal fluid comparable with that of tryparsamide or orsanine In view of this low activity it is somewhat surprising to find that the average arsenic content of the fluids should have been as high as it was for this class of compound is itself trypanocidally active in vitro and does not require any modification by the tissues for its activity, as tryparsamide does. It is suggested that the inactivity of the arsenic in the spinal fluid after a dose of an arsenobenzol is probably due to its conversion to an inactive condition by oxidation or by combination with tissue components.

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[1] Yorke W and Murgatroyd, F, *Brit med J* 1930, 1 1042

[2] Hawking F Hennelly T J and Quastel J H *J Pharmacol* 1937 59 157

[3] Yorke W and Murgatroyd F *Trans R Soc trop Med Hyg* 1935 28 435

This method of examining trypanocidal drugs invites speculation. The original dream that therapeutic action might be linked with and predicted from chemical constitution has only been realised partially and further advances may well come from the examination and correlation of the physicochemical properties of existing drugs. Finally it may be observed that modern chemotherapy, though comparatively newly born, has already produced powerful weapons against such deadly diseases as sleeping sickness, syphilis and other spirochætoses and leishmaniasis and is now giving us fresh hope in the contest with bacterial infections. At a time when interest in this science is reawakening it is gratifying to look back upon its international development and to realise how much the peculiar problems of tropical medicine and their study have contributed to its progress.

PHYSICAL EDUCATION IN GERMANY

LAST November ten British delegates, five of them from the Board of Education, went as guests of the German Government to study physical training. Every facility was given both to the delegation and to its members to pursue apart from the full official programme whatever lines of inquiry suggested themselves and there was never any hint of restraint. The delegation's observations and inferences form an absorbingly interesting report[1] issued as a pamphlet by the Board of Education.

The extent and range of physical training in Germany are in themselves impressive evidence of what can be achieved—in Germany. But differences of national temperament, history and political conditions have to be constantly borne in mind in comparing what is being done there with what is being done and what it might be desirable to do in England. The connexion between politics and physical training in Germany has always been very close. JAHN (1778–1852) "the father of German gymnastics" was an ardent and bitter politician and the gymnastic and physical training clubs that sprang up all over Germany through his teaching soon became suspect to METTERNICH and the Holy Alliance because of their political liberalism. They were finally proscribed, JAHN himself being thrown into gaol, and it was not until some twenty years later in 1842 that the right of association for physical training was generally allowed. The clubs were immediately re-formed and since that time every political party, whether of the Right, Centre or Left, has tended to have its physical training associations as a matter of course. No wonder then that at the first mass meeting held by the National Socialists in 1920 one of HITLER's twenty-five articles of policy included "increasing bodily efficiency by obligatory gymnastics and sports, and extensive support of clubs engaged in the physical development of the young." The whole population is now under legal or moral obligation to train. Both in school and university physical training is given as important a place as that held by academic subjects and is compulsory for all but the medically unfit. Most schools in the towns have at least one gymnasium generously equipped with fixed and movable apparatus; all children have to change into gymnastic dress and it is likely that soon six class periods a week will be devoted to the subject. In the universities eighteen months training and the attainment of a certain number of marks are necessary before a student may proceed to the second half of the second year of academic study.

Beside this foundation of training for the young there are the more specialised organisations systematically endowed with glamour which the aspiring young German enters if he is able. The oldest of these, the Hitler Youth, is closely connected with politics. One of its objects apart from physical training of all kinds is undoubtedly the spread of Nazi principles among the young "and in this," the report says, "it must be regarded as having been eminently successful." No boy is actually forced to join, but anyone who has not passed through the movement is in future to be permanently barred from a professional career in the service of the State. The subjects of instruction are ordinary physical training and gymnastics, small bore rifle or air gun shooting, outdoor sport, and also where possible motoring, sailing, aviation and gliding. The boys take themselves very seriously, being taught "that their organisation is one of the main bulwarks of mighty Germany, the country which is the sole prop of order and hope of civilisation in a collapsing world." From their ranks are drawn the children for the resident Napoli schools (National Political Establishments) which train selected boys for political, military and other posts of responsibility. The eight years course has as its first aim the cultivation of healthy hardy bodies, secondly the formation of character and training in leadership, and last and avowedly least important, to give the pupils proficiency in book knowledge. A particular feature of the course is a period of six months spent away from the school working in mines or on the land.

For the non-Jewish Germans of any age there is the organisation known as "Kraft durch Freude" (Strength through Joy) viewed by the delegation as "the most agreeable and possibly the most instructive phenomenon of the Third Reich." It seeks to teach the worker sensible ways of occupying his leisure; it continually reminds him that he has the right to demand of the State that it shall cater for his leisure in his manhood as it catered for his education in his childhood. Actually the organisation offers an enviable choice of occupations at very low charges they include among many others riding, tennis, ski ing, sailing, camping, rowing, and even romping for mothers and children The report suggests that the actual cost of the classes is largely covered by the small charges but that the large expenditure on organisation and propaganda must be met from the trades union contributions which are one of four or five statutory deductions from every German's pay Two other organisations mentioned in the report, though not strictly to be classed as physical training, are the compulsory labour service at camps for all youths at about the age of eighteen, which improves health by giving the youths work out of doors, and the Land Year scheme for adolescents (14–15 years) which familiarises town children with the work and life of the country

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[1] Physical Education in Germany. London: H.M. Stationery Office. Pp. 78. 1s.

The principal differences between the German and English methods of physical training are that while we aim at developing all parts of the body in an harmonious way, in Germany stress is laid on exercises of natural function in which apparatus-work and sports and games play an important part We emphasise correct posture and precision of movement, but the German does not specially encourage stylish gymnastics and his work often appears rough and ready In Germany pluck and determination count for more than the manner of performance The delegation comment on the fact that no very great number of cases of poor physique were seen although nearly all those seen at work in schools must have been born during the blockade period, the more or less anarchic period after the war, or in the inflation period In general the school population gave the appearance of being not less well nourished than the school population in England Although the Germans were at pains to maintain that the training was not military in character, many of its features were thought to have that flavour "whether the aims of the movement (Hitler Youth) are at present consciously militaristic or not, there is no doubt that they can, and that instantly, be given a definite militaristic turn if the powers that be in Germany at any time so wish" Another criticism is that the present German preoccupation with physical training may go too far, it is unlikely that in this country the imposition of so much training irrespective of an individual's bent would be considered a happy balance of mind and body But whatever our criticisms we can but envy the immense opportunities that the German State offers its citizens for cultivating health, and the burning will to health and good physique that seems to live in the German population of to day Such intensity could be achieved only in the service of something greater than self

ANNOTATIONS

FOOD AS A FUGUE

IN a recent broadcast[1] Dr Carnwath remarked "I sometimes think that what we want is someone who will take food as Sir Walford Davies takes music, tell us what the simple elements mean and how they can be built up into a harmonious whole, and then each local authority should have a specially trained visitor who will be prepared to show the mother in her own home how with the simple means and appliances at her disposal she can apply this teaching, and perhaps thus in time we shall get housewifery raised to the high esteem in which it should be held" The suggestion is an attractive one and the analogy, at any rate up to a point, is sound To the ordinary listener, who might be described as the consumer of music, the basis of musical appreciation consists in learning how to enjoy combinations of melodious sound He is not, in his capacity of consumer, concerned with the production and still less with the physics of sound, wave lengths and amplitudes mean nothing to him Similarly, to the ordinary consumer of food, eupepsia and successful nutrition do not depend on an appreciation of proteins and carbohydrates A good meal is a poem to the creation of which art and skill are more essential than a knowledge of calories and vitamins Without going all the way with Stephen Leacock, who once lightly suggested that in any decent household all these things were washed down the sink before the food was put on the table, our aim should be not to cumber the mind of the ordinary consumer with technicalities but to present him with the fruits of research We should in fact, teach him to think in terms of harmonious combinations of beans and bacon It seems, however, that Dr Carnwath's suggestion relies to no little extent on finding Sir Walford's personal charm in a man of scientific standing with the equivalent of a concert performer's technique in cooking and a composer's art expressed in marketing Such a man might be able to raise more enthusiasm for his art and to show the subject in better perspective than many talks on pure theory or on the strictly practical aspect Though he could scarcely follow the musician's example and broadcast examples of good food during his talk, his teaching would undoubtedly be widely acceptable and a useful aid to the pride in housewifely ingenuity which is hard put to survive the handicap of the washing up Many housewives, too, would welcome expert teaching in cookery in their own homes, but the aptitude for household management, like most other attainments, is only gained slowly But something should be done about it for, as Lord Dawson last week remarked, it is the lack of education in the choice and the cooking of food that is largely to blame for the present under-nutrition People simply did not know how to choose food within the reach of their earnings, failing this knowledge they lived on tinned fish, tinned vegetables and other things which needed no cooking It was not that the housewife was unwilling to cook often she had never been taught how to cook One of the best investments the Government could make would, Lord Dawson thought, be to provide travelling vans to go about the country, stopping here and there to give practical lessons on the choice and cooking of food Dr Carnwath holds that the best approach to the problem is through the child Teach the school child to know and appreciate good food and good cooking and when he is older he will demand—and get—them

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[1] Are We Well Fed ? By Dr T Carnwath deputy to chief medical officer Ministry of Health and Board of Education *Listener* June 2nd p 1091

MOBILISATION OF JOINT FRACTURES

"Le mouvement, c'est la vie" was the motto that appeared on the title page of a book published in 1895 in which Lucas Championnière the first French surgeon also to advocate Lister's methods maintained that immobilisation of fractures is in some respects a false ideal. Although few surgeons ever agreed with the extreme views expressed by Lucas Championnière it is partly the result of his writings that the importance of movements in restoring the function of a broken limb is now so widely recognised. It is true that the modern tendency is toward more complete and prolonged immobilisation but movements are by no means neglected. Even Böhler one of the strongest supporters of the unpadded plaster cast, emphasises the necessity not only for the movement of all joints free to move but also for the active contraction of all the muscles acting on the immobilised joints of the injured limb and his system is a failure when these conditions are not faithfully observed.

It is everyone's experience however that the movements required in the early period of treatment are often hindered or even prevented because the patient finds them so painful and the difficulty is greatest in just those cases where prolonged immobilisation is most undesirable—i e where fractures involve joints. A way out of this difficulty is suggested by Leriche[1] who has devised a method for use in joint fractures without displacement or with a displacement not requiring exact reduction [2] Immediately after the diagnosis has been confirmed and the extent of the injury defined, by radiography pain is abolished by the injection of novocain into the ligaments and periosteum around the fracture and the patient is instructed to move the joint through as big a range as possible. The infiltration and exercises are repeated every day for a period lasting up to a fortnight. Passive movements of the anæsthetised joint are absolutely prohibited. In practice the method is said to be successful and the results very good, especially as regards freedom from stiffness of the joints. One great advantage is that the patient's confidence is quickly restored when he finds he can move the injured limb without pain and he is thus put in the right frame of mind to coöperate with the surgeon and to help himself towards full recovery in the shortest possible time. At the spring meeting of the British Orthopædic Association reported on p 96 Dr Kiaer of Copenhagen reported good results from local anæsthesia with active movements in the treatment of joint contractures and of recent sprains.

Leriche claims that this method rests on a sound basis. He describes how an injury to a joint is followed immediately by constriction of its vessels, caused by reflex stimulation via the sympathetic how vasodilatation soon follows owing to an inhibition of the sympathetic and how this vasodilatation lasts as long as impulses can pass from the irritated sensory nerve endings of the injured joint. It is this state of vasodilatation which he considers responsible for most of the bad results of joint injury such as œdema and synovial effusion hyperplasia and excessive vascularisation of the synovial membrane thickening and stiffening of the ligaments decalcification of the bones and calcification in the soft tissues—in short most of the causes of the chronic arthritis and periarthritis that often follow joint injury and cause so much disability. Leriche has studied the histology of these processes and has observed similar results presumably caused by vasodilatation in the joints of sympathectomised limbs. His belief is that his method of treating joint fractures not only allows the patient painlessly to perform those movements that will restore the function of the limb as a whole but also cuts off at their source those stimuli that would reflexly cause permanent damage to the joint itself.

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[1] Leriche R., *Pr méd*, June 12th, 1937, p 873.
[2] Leriche R and Froelich F *Ibid* 1936 44 1665

ŒDEMA AFTER BREAST OPERATIONS

INTERRUPTION of lymphatic drainage of the arm with resulting œdema is a serious disadvantage of the radical operation for carcinoma of the breast and one that is not at all easily avoided altogether. At its worst œdema causes suffering and disablement it has even necessitated amputation of the arm. Possibly the dissection of the axilla is sometimes too thorough and the vessels are stripped too completely. In other words, a more radical operation is performed than that originally designed by Halsted. Some degree of œdema of the arm is probably almost unavoidable unless the preservation of the lymphatic drainage of the arm is kept in mind. Reinhoff[1] accordingly proposes a modification of the radical operation in which a fan-shaped muscle flap of the latissimus dorsi is turned up into the axilla and sutured to the remnants of the origin of pectoralis major muscle. The muscle flap is to act as a lymphatic channel between the arm and the thorax and Reinhoff believes that lymphatic vessels regenerate between the stump of the pectoralis major and the latissimus dorsi. The flap has the added advantage of filling a subcutaneous dead space that is often left under the upper skin flap. This space is a source of trouble especially where primary closure of the wound has been effected by stretching the flaps rather tightly. It tends to fill with blood or serum and may become infected and if infected granulation tissue eventually obliterates the space a firm mass of scar tissue is formed which interferes with movement of the arm and probably also with the re-establishment of the lymphatic circulation in the injured tissues. So far Reinhoff has done his plastic modification of the radical operation only four times, and his preliminary report is written in the hope of interesting other surgeons. He says that the fashioning and suture of the flap has prolonged the operation by barely ten minutes that healing and ultimate function have been excellent and that there has been no œdema. The latissimus dorsi has been chosen as being a muscle very unlikely to be affected with carcinoma.

FLUORESCENCE MICROSCOPY

THE observation of a fluorescent microscopical image formed by illuminating a suitable object with ultra violet light has been possible for many years but no great use has been made of what is potentially a valuable means of research. The practicability of the method depends on having an appropriate light source and this is perhaps the main reason for its limited employment for the necessary physical equipment is not readily available in biological laboratories. What is required is an illuminant emitting ultra violet light which can be separated spectroscopically or by colour screens from accompanying visible radiations and a quartz condenser enabling the object to be illuminated in ultra violet light only. The object should be mounted on a quartz slide but can be covered with glass, since the image is observed with a glass lens The image is formed in visible light and it represents the fluorescent response of some object or element of structure The response, which within limits is characteristic, often presents an amazingly beautiful picture An alternative method is to stain the object with a fluorescent dye and to observe the image so formed, the response depending on the retention or otherwise of the dye by each element of structure This method may be selective, as most staining reactions are, but it is in the main based on the facility with which the dye is discharged from or retained by the structural elements

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[1] Reinhoff W F., *Bull Johns Hopk Hosp* May 1937 p 309

Hagemann[1] of Cologne describes experiments in which he claims to have demonstrated the presence of virus bodies by staining them with primulin and observing the fluorescent image therefrom Apparently this fluorescent dye is selective, the virus bodies are shown in contradistinction to other images of structure Infectious ectromelia, vaccinia and canary pox are specifically mentioned, and it is inferred that other viruses may be identified in the same way If the method does all that is claimed for it, an additional means will be at hand for demonstrating the presence of virus in mass Thus the presence of virus bodies in cytoplasmic inclusions should be demonstrable, although their demonstration can now be achieved as a rule by other microscopical methods The formation of the fluorescent microscopical image, although it is formed as the result of illumination by ultra violet radiation, is still in terms of visible light The resolution obtainable therefore is that to be expected in using an ordinary microscope

THE CHEMISTRY OF RED CELLS

In spite of the recent advances in hæmatology little is known of the chemical constitution of the red cells in health or disease Apart from determinations of cell dimensions, hæmoglobin content, and resistance to sodium chloride solutions, the few observations published by Maizels[2] last year are all that have hitherto been available Hence a comprehensive study of the chemical composition of both serum and erythrocytes in normal children and in hæmolytic anæmias, hypochromic anæmia of infants, and Addisonian pernicious anæmia is likely to be useful A group of workers in Detroit[3,5] have investigated the lipoid distribution and concentration of sodium, potassium, chloride, and nitrogen in both cells and plasma, and related their chemical findings to those involving the physical properties of the red cell—namely, its size, shape, and resistance to both sodium chloride and saponin Studies of small groups of normal children living under rather different conditions as regards nutrition suggest that red cell constitution, quite apart from hæmoglobin content, depends, partly at least, on the quality of the diet This important finding clearly needs confirmation upon larger groups of children. In the hæmolytic anæmias of infancy examined—namely, erythroblastic anæmia of Cooley, sickle cell anæmia, and acholuric jaundice—the Detroit workers found the potassium sodium ratio of the red cells decreased below normal, while a relatively large amount of neutral fat was present with a relative percentage increase of the cholesterol esters In hypochromic anæmia of infancy, on the other hand, the lipoid distribution and potassium sodium ratio were normal After splenectomy in acholuric jaundice the cell chemistry was more normal The red cells in adult pernicious anæmia also contained excessive amounts of cholesterol ester and were deficient in phospholipoid and free cholesterol. The potassium sodium ratio was decreased With liver therapy the chemical composition of the cell rapidly became normal. After a discussion of certain aspects of cellular physiology the authors conclude that the changes noted in the hæmolytic anæmias and in pernicious anæmia indicate that the erythrocytes are not only in a state of lowered function or activity but are also degenerating The absence of such changes in hypochromic microcytic anæmias on the other hand implies that there is no such severe derangement of function in the iron deficiency anæmias Twenty years ago pernicious anæmia was regarded as a hæmolytic anæmia The present study suggests that it must be regarded still as closely related to those anæmias that are thought to be hæmolytic Perhaps, however, these will lose their title when more is known about their origin

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[1] Hagemann P K H *Münch med Wschr* May 14th 1937, p 761

[2] Maizels M *Biochem J* 1936, 30 821

[3] Erickson B N Williams, H H Hummel F C and Macy J G *J biol Chem* 1937 15, 118

[4] Erickson B N, Williams, H H Hummel F C Lee P and Macy J G *Ibid*, 1937 15 569

[5] Williams H H Erickson B N Bernstein S Hummel F C, and Macy J G *Ibid* 1937 15, 599

BODY-WEIGHT IN NORMAL AND TOXÆMIC PREGNANCY

The order of appearance of the three cardinal symptoms of the eclamptic toxæmias varies in different patients, but it is fairly well established that œdema is often demonstrable before albuminuria or hypertension This is all the more remarkable because the usual sign of œdema—pitting of the subcutaneous tissues on pressure—is a crude test that becomes positive only when fluid retention is well advanced The latent retention that precedes obvious œdema is, however, accompanied by a considerable rise in body weight, and weight-charts are accordingly useful where œdema is anticipated For these reasons regular weighing is becoming an important part of the routine of the antenatal clinic The principal difficulty in interpreting such weight-charts comes from the fact that weight is increasing, for various reasons, throughout normal pregnancy and it becomes desirable to determine the limits of the normal increment Data bearing on this point have already been published, and Dame Louise McIlroy and Dr H E Rodway[1] have recently contributed figures based on 1000 normal pregnancies, in most of which measurements were continued into the puerperium In addition measurements were obtained in 75 cases of toxæmia, and comparison with the normal group confirms the impression that toxæmia is associated with an abnormal increase in body weight The authors believe that excessive gain in weight should be corrected by restriction of diet and increased exercise It is possible that such measures, besides reducing weight, may also abort incipient toxæmia But as long as the nature of toxæmia remains as obscure as it is at present there can be no general agreement about its treatment, and some obstetricians would question the wisdom of dietetic restriction during pregnancy

Advances in endocrinology have revived hope that the cause of toxæmia may become clear before long and that rational means of prevention will follow If this expectation is realised the need for early diagnosis will become imperative and weight-curves may become indispensable It has not of course been practicable to print in full the data collected by McIlroy and Rodway the averages which they have tabulated give useful indications of the general trend of normal and abnormal changes in weight But statisticians rightly insist that averages are rarely adequate and often misleading Data of this kind lend themselves admirably to statistical analysis and it may be hoped that some statistician will find time to analyse the figures which these and previous writers have collected and present the obstetrician with means of deciding whether a given weight-curve is or is not significantly abnormal

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[1] *J Obstet Gynæc* 1937 44, 221

THE "MEDICAL OFFICER" AT HOME

Capt. G S Elliston entertained the council of the Society of Medical Officers of Health to dinner at the House of Commons on July 1st. He was moved to do so by two events : one the fact that the *Medical Officer* founded by himself and continued by his son had just completed its 1500th issue the other that on that very day a hundred years ago had come into force the Registration Act of 1836 creating a service of local registrars supervised by a registrar general and charged with the duty of registering births and deaths It was this registration which provided the material on which preventive medicine was securely founded and he sketched the rapid sequence of events that led to the formation of the Society of M O H s Sir Francis Fremantle acted as deputy chairman at the dinner when an interesting series of reminiscences was interrupted from time to time by the bell summoning chairman and deputy to the division lobby Medical journalism received an unusual meed of honour and Capt Elliston s own services as the journalist of the public health service were very properly recognised

THE GENESIS OF KIDNEY STONES

How renal calculi begin has long been a matter for speculation. Some authorities assume that loose fragments of organic material, probably due to infection, form the nidus for crystallisation while others believe that the calculi arise from concretions formed in the renal tubules Lately a new conception has been put forward by Randall [1] based on his examination of a large series of human kidneys removed post mortem. He found that a certain number showed minute plaques of calcification under the mucous membrane of the papillæ These consisted of deposits of calcium carbonate in the interstitial tissues and on the basement membranes of the urinary ducts. Generally these deposits were completely embedded in the tissues but in a few the overlying mucosa was destroyed so that the plaques lay exposed. Concretions of calcium phosphate or calcium oxalate had formed on the surfaces of some of these and were growing into the calyces of the kidney and Randall concluded that such formations represented the origin of calculi. These observations are clearly important Calcification of the kidney as recent experimental work has shown is associated with disturbances of the mineral metabolism and lesions somewhat similar to those described by Randall can be produced in rats by a variety of factors ranging from overdoses of vitamin D or hyperparathyroidism to an ill balanced though quite adequate diet In human pathology renal calcification is especially associated with disturbances of the parathyroid glands and with certain diseases of the bones and Chown [2] has recently shown that it forms the basis of renal rickets. Randall s findings therefore may not only elucidate the origin of calculi but may go far towards explaining their peculiar incidence.

IRON METABOLISM

STUDIES of iron metabolism are complicated by the fact that iron is excreted almost entirely in the fæces. Experiments on iron balance cannot give a complete picture of the utilisation and absorption of iron since no distinction can be made between that portion of the iron which passes unchanged through the gastro intestinal tract and that which has been utilised and re-excreted into the bowel Nevertheless, workers in this country and America have lately managed to bring forward many interesting facts about the fate of large doses of iron administered by mouth Brock and Hunter [3] and Fowler and Barer [4] have shown that oral administration of iron and ammonium citrate and Blaud s pill results in retention of large quantities of iron. An average of 32 6 per cent of the iron administered was retained by the body according to the latter observers, while only 1 96 per cent of that administered was utilised in the formation of hæmoglobin No correlation was shown between the amount of iron retained and the increase in hæmoglobin content. Non-anæmic subjects were found to retain as much iron as patients with hypochromic anæmia—due to hæmorrhage or of the idiopathic type—both when the intake of iron was normal and when large amounts were given That patients with achlorhydria retain less iron from a normal dietary intake than patients with normal gastric acidity has always been concluded from Mettier and Minot s observations [5] on the reticulocyte response to iron given in a buffered alkali or acid medium By means of balance experiments Barer and Fowler [6] have now proved this to be true On the other hand, they found that when large doses of iron were given retention was not influenced by the character of gastric secretion This observation is at present hard to understand if Mettier and Minot s results are accepted Administration of hydrochloric acid even in large quantities did not influence the absorption of iron.

Fowler and Barer [4] discuss the bearing of these findings on the possible ætiology of idiopathic hypochromic anæmia Since patients with this type of anæmia retain iron as well as if not better than healthy normals or patients with anæmia due to hæmorrhage and since the utilisation in hæmoglobin formation is equally satisfactory they conclude that the idiopathic form cannot be due to a failure of the internal metabolism of iron. They found a consistently negative iron balance in people on a low intake of iron—i e below 0 7 mg —and suggest that such an iron poor diet might theoretically account for the degree of anæmia On the other hand they state that few of their patients had been taking such a poor diet. Reduced iron intake they therefore conclude may be a theoretical cause of anæmia but in practice is not necessarily the only cause Even in patients with achlorhydria which reduces iron absorption they believe there must be some additional and at present unknown factor

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[1] Randall A *Ann Surg* June 1937 p 1009

[2] Chown B *Canad med Ass J* 1936 35 134

[3] Brock J F and Hunter D *Quart J Med.* 1937 6 5

[4] Fowler W M., and Barer A. P., *Arch intern. Med* 1937 59 561

[5] Mettier S R. and Minot G R., *Amer J med Sci* 1931 181 25

[6] Barer A P and Fowler W M., *Arch. intern. Med* 1937 59 785

Neither Brock and Hunter[3] nor Fowler and Barer[4] have any evidence either as to the site of storage or use of the enormous quantities of retained iron

MATERNAL MORTALITY AND PAIN SAVING

POSSIBLE means of reducing maternal mortality are receiving as much attention in the United States as they are in this country A writer in the *Journal of the American Medical Association* for May 15th dealt with one cause of preventable deaths that was of formidable dimensions in the series of fatalities he was considering, but does not, we fancy, play a large part in the causation of deaths during confinement in Great Britain This factor is the agent employed for obstetric amnesia, analgesia, and anæsthesia Dr T L Montgomery denounces the use of spinal analgesia in midwifery, and finds that the barbiturates are not as free from danger as they are often represented to be He deplores the fact that according to his evidence the accoucheur seemed often so bent on getting his patient asleep that he gave little thought to the outcome of his hasty procedure The paper deserves perusal by practitioners engaged in midwifery practice, for the present demands, both professional and lay, for "painless labour" are sometimes made by those who do not sufficiently weigh the risks that may be involved in securing absence of pain "Safety first" does not apply only to road traffic, but fortunately safety and analgesia are seldom incompatible if suitable methods are used

IMPERIAL SOCIAL HYGIENE CONGRESS

A FULL and varied programme was arranged for the members of the Eighth Imperial Social Hygiene Congress who met at Caxton Hall, London, S W, this week The congress, over which Mr L S Amery presided, was organised by the British Social Hygiene Council in a dozen sessions, some concurrent The subjects of debate included international aspects of social hygiene, such as traffic in women, and the welfare of seamen in ports, official and voluntary coöperation in health education, venereal disease in rural areas at home and overseas, the welfare of the mercantile marine, family life and recruited labour, the training of nurses overseas and for overseas service, and nutrition in relation to education, agriculture and medicine To day, Friday, the discussions will turn on the child and the institution, and marriage in relation to social hygiene The men and women chosen to open up each subject are experts, and the opinions expressed and the suggestions made by them are well worth pondering Mr E E Ekstrand, director of opium traffic and social questions section, League of Nations, maintained that the system of regulation of prostitution, after having been undermined for many years, is now everywhere collapsing Even in the East it is now being recognised that licensed brothels offer no guarantee against infection which cannot be certainly detected by a routine periodical examination of prostitutes

Mr E F Outen, late director of public instruction, Bengal, spoke wisely of the necessity of coördination in public service, voluntary work to be effective must be in organised harmony with all other agencies aiming at the same ends, in partnership with the State and in matters of high policy under its direction

Mr R E Hopton late Government specialist in venereal diseases Cyprus, expressed the dissatisfaction felt in many countries with the treatment of venereal disease in rural as opposed to urban areas, and outlined different schemes organised in Cyprus and in Southern Rhodesia to cope with this problem Dr Margaret Balfour, lately chief medical officer, Women's Medical Service, India, raised the question whether, especially in backward communities, it would not be possible to train and employ married women as nurses In all training-schools, she notes, it seems to be taken for granted that the nurses must be single This point is perhaps worth consideration, at any rate in countries where a severe shortage of nurses is felt Mr W Bryant Mumford, head of the colonial department, Institute of Education, University of London, made some provocative suggestions as a basis for discussion between administrators, educationists, and anthropologists His theme was the desirability that educational philosophies designed for application in the African dependencies should be devised not by Europeans, for Africans in a spirit of patronage, but by Africans, in conjunction with Europeans, for the well being of the Africans themselves This communication was typical of the breadth and humility of the modern approach to problems of social hygiene Congresses conducted in this spirit of inquiry and freedom from dogmatism have great propaganda value

THE RETURN VISIT

BRITISH surgeons this week returned the visit of French surgeons to London last summer[1] The party, which numbered 30, included Sir Cuthbert Wallace, president of the Royal College of Surgeons of England, Sir Holburt Waring, past president, and several other members of the council On Monday morning they visited the Institut du Cancer at Villejuif directed by Prof G Roussy, dean of the Faculty of Medicine of Paris In the afternoon they attended a demonstration of recent surgical research in the hall of the Académie de Chirurgie In the evening the Académie entertained their guests at the Hotel Ritz Tuesday morning was occupied with visits to various operating theatres In the afternoon the Castle of Chantilly was thrown open and the treasures of the Chateau and of the Musée Condé were shown by M Henri Malo, conservator The order of officer of the Legion of Honour was conferred by the President of the Republic on Sir Cuthbert Wallace, Mr G E Gask, and Mr H S Souttar, who took a leading part in establishing this entente chirurgicale

THE recruitment of nurses for mental hospitals is one of the most difficult questions with which the visiting committees of these hospitals have to deal The feeling that all is not well led the Mental Hospitals Association to refer a report on the subject to a joint committee of the Association and the Workers' Union, acting on this occasion as a Whitley council The committee reported last May and its conclusions were circulated to members of the Mental Hospitals Association which is holding its 19th annual meeting at the Guildhall, London, on Tuesday next, July 13th

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[1] *Lancet* 1936, 2 1486

EXTENSIONS AT THE GENERAL HOSPITAL, NEWCASTLE UPON TYNE — An extensive programme of additions and improvements at this hospital has been planned by the health committee at an estimated cost of £272 000 A new main block for children a medical ward of 80 beds a surgical ward of 90 beds, a surgical tuberculosis and thoracic surgery block of 80 beds and an additional wing to the nurses' home form part of the scheme and application has been made to the Commissioner for Special Areas for a grant

SPECIAL ARTICLES

MEDICINE AND THE LAW

Medical Opinion and the Assessment of Damages

THE commonest type of civil action in the law courts is a claim for damages for injuries due to a motorist's negligent driving. Naturally the legal advisers of the parties rely greatly upon the opinions of the medical experts—how serious are the injuries and how far are they permanent? If the defendant (usually with an insurance company at his back) offers a sum in settlement will the plaintiff be wise to accept it? If the action proceeds and the defendant pays a sum into court had the plaintiff better take the money? If he goes on with his claim and recovers less than the amount paid in, he will have to pay the costs incurred after the moment at which he could have taken the greater sum paid in. It is rather a gamble. Who can say what a jury will not award if its sentiments of sympathy towards the injured plaintiff are skilfully played upon by an eloquent advocate? Experienced counsel may be able to gauge what a jury will give, but nowadays the juries are largely being eliminated and it is common gossip in the Temple that a judge sitting alone without a jury may award damages with a more surprising generosity than a jury would have displayed. Barristers in a confidential mood will sometimes classify particular judges as plaintiffs' judges and others as defendants' judges. Clearly it is a ticklish business to advise a defendant how much he should pay into court; it must be the smallest amount possible of course and yet it must be big enough to succeed in tempting the plaintiff to take the money and discontinue the claim.

Two recent cases show how hard it is to foresee what the plaintiff will recover. Last week Mr Justice Atkinson was trying the claim of a woman who had been injured in a traffic accident. He awarded £65 and then was told that as much as £225 had been paid into court by the defendant motorist. The judge was inclined to scold not only the advisers of the plaintiff for not having accepted the offer of £225 but also the advisers of the defendant. If, he said to the motorist's counsel, on your medical advice £225 was the proper sum to pay in, then the evidence given for the defence to-day has been grossly misleading. The defendant's medical witnesses if they really thought £225 was a fair sum for the plaintiff to recover had been unfairly minimising her injuries in the witness box since the result of their evidence was that only £65 was awarded. In the other case Roach v. Yates a bricklayer aged 32 had been struck from behind by the defendant's car when on his bicycle. He had been an athletic man in good employment. He had played Rugby football up to his 31st year and now as the result of the accident he had serious brain injuries from which he would never recover. For the rest of his life he would need two people to look after him; he was suffering from traumatic dementia and epilepsy. Mr Justice Hilbery awarded him £2750 damages (including £542 special damages); but the Court of Appeal has increased the sum to £6542. Delivering the judgment on appeal Lord Justice Greer conceded that it was not easy to put a figure on what Roach had lost by being converted from a healthy athletic man who enjoyed life into what was very nearly a hopeless lunatic through injury to the brain. His life had been shortened and ruined and the accident had turned him into a member of society who could earn nothing at all for the rest of his days. It is not possible adequately to compensate the appellant for what he has lost through the accident. The three judges of the Court of Appeal, it seems had independently come to the figure of £6000 for general damages in addition to the special damages of £542. This was the first time that the Court of Appeal has taken upon itself the extremely difficult task of assessing the damages in an action for personal injuries. It will be interesting to see if the decision encourages a flood of appeals from plaintiffs dissatisfied with the amount awarded them. The Court of Appeal usually declines to interfere merely because its members would themselves have awarded a greater or less amount than was in fact awarded at the original trial. It does not intervene unless the trial judge has applied some wrong principle in assessment or unless the amount is such as no judge or jury could reasonably have awarded.

Shortened Expectancy of Life

An additional element of difficulty has arisen since the Law Reform (Miscellaneous Provisions) Act of 1934 enabled all causes of action subsisting against, or vested in any person to survive against his estate or for the benefit of his estate as the case might be. In Roach v. Yates the figure of damages included something for the shortened expectation of the plaintiff's life. If he had died his estate could have claimed damages on that ground too. This point was established a few days ago by the decision of the House of Lords in Rose v. Ford. Mabel Rose aged 23 was seriously injured by a negligent motorist on August 4th 1934 ten days after the new law received the Royal Assent. On the 6th it was necessary to amputate her right leg; on the 8th she died of her injuries. During the four days after the accident she lay for the most part in a state of coma—scarcely we may assume able to let her mind dwell on the shortening of her life. She lost her leg but for two days only. How were these items of damage to be assessed? Mr Justice Humphreys in the first instance awarded £500 for pain and suffering and for the loss of the leg but he refused to award any damages for loss of expectation of life. He thought the only ground for such damages was the mental suffering of the girl at the shortening of her prospect of life; she had been unconscious for long periods after the accident and in his view no such pain or suffering had been proved. In the Court of Appeal all three judges agreed that the trial judge went wrong in thinking that in the 1935 decision in Flint v. Lovell, the reason for awarding damages was mental pain and suffering from contemplation of the loss. There was, it will be seen, a problem of legal metaphysics; was the damage objective or subjective? All three judges held that there could be no damages for loss of the leg except for the loss of the use of the limb for the four days after the injury. They cut down the £500 award to £22—namely £20 for Mabel Rose's pain and suffering and £2 for the loss of the leg. Lord Justice Greer in a minority judgment thought there ought to be some award for loss of expectation of life and he assessed the sum at £1000. His two colleagues thought themselves bound by a decision of 1917 (the Amerika case) whereby a plaintiff was held unable to recover damages if his wife or servant was killed by the negligence of a third party But the two judges in the majority were willing to accept their colleague's figure of £1000 in the event of the plaintiff being legally entitled to recover on this point In the House of Lords Lord Justice Greer's view was upheld and the sum of £1000 was deemed recoverable Lord Atkin emphasised that a living plaintiff can, and frequently does, recover damages for diminished expectation of life, the 1934 Act vests the cause of action in the injured person's personal representatives if he dies, the estate of Mabel Rose was therefore entitled to damages for shortening of her prospect of life even though she had not initiated any claim in the courts before she died "I am satisfied," said Lord Atkin, "that the injured person is damnified by having cut short the period during which he or she had a normal expectation of enjoying life, and that the loss or *damnum* is capable of being estimated in terms of money and that the calculation should be made" Lord Atkin hinted that it might be a peculiarly difficult calculation Should, for instance, a rich man be deemed to have had greater opportunities of pleasurable enjoyment than a poor man? Into these speculations the House of Lords did not further enter Lord Justice Greer's figure of £1000 held the field, how it was reached we are not told However carefully a medical expert may report upon a case, however elaborate the actuarial calculations, we may expect that the result will be just a good round sum

Legal Qualifications for London Coroners

The London County Council decided last Tuesday to abandon the excellent rule whereby London coroners have been required to possess both a legal and a medical qualification Henceforth only a barrister or a solicitor will be eligible, though due weight will be given to the possession of experience as deputy coroner and of knowledge of forensic medicine The L C C makes this change out of deference to a recommendation put forward in the report of the Departmental Committee on Coroners last year The suggestion was one of a series of highly controversial proposals for which it is perhaps significant that the Home Office has so far shown no sign of inviting Parliamentary acceptance The suggested requirement of solely legal qualification is obviously bound up with other proposals for limiting the scope of the coroner's inquisition, and for restricting the evidence to be offered, for which there is no reason to believe that the public is anxious

It was stated at the meeting on Tuesday that all London coroners were doctors who had qualified as barristers, and that, when men were found with the dual qualification, they were sure to be doctors who had "a mere paper qualification." The medical applicant may still be capable of appointment by virtue of his experience as deputy After the present generation, however, it seems that no doctor need apply So long as the issues which arise at inquests are medical and surgical in their nature, so long will training in medicine and surgery be helpful to the tribunal The change will be widely regretted Nothing in the conduct of metropolitan inquests offers it any justification

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BURNHAM-ON SEA MEMORIAL HOSPITAL.—Instead of erecting an entirely new hospital it has been decided to add a Coronation wing to this hospital at a cost of £4000 This is half the amount estimated for the more ambitious scheme, and £3000 is already in hand

BRITISH ORTHOPÆDIC ASSOCIATION

A SCANDINAVIAN CONGRESS

THE British Orthopædic Association, under the presidency of Mr W R BRISTOW, held its spring meeting in May, in Copenhagen and Stockholm

COPENHAGEN

Three days were spent in Copenhagen, of which two were devoted to visiting the new orthopædic hospital on the outskirts of the city, where an attractive programme had been arranged by Dr Paul Guildal and his colleagues In Copenhagen the orthopædic service is financed by the State and the medical staff are all salaried officials

Dr GUILDAL spoke on the orthopædic treatment of *infantile paralysis*, in which his practice and results closely correspond with those of the visitors

Dr BENTZON advocated the use of *drilling osteoclasis* in preference to osteotomy for the correction chiefly of outward curvature of the tibiæ due to rickets Through a tiny incision multiple drill holes are made in a transverse line at the apex of the deformity The bone is then broken manually or with an osteoclast Dr Bentzon hoped that this simple operation would restore osteoclasis to favour and indicated that experience would probably show that it had an even wider field of application He then demonstrated the result of an operation for *gluteus medius palsy* The procedure consisted of transferring the insertion of the upper two thirds of the gluteus maximus upwards and forwards to occupy a true lateral position on the crest of the ilium The patient whom he showed was able to walk without a trace of limp and could stand on the affected leg with perfect balance

Dr KIAER made some remarks on the treatment of *joint contractures* He had found very helpful a combination of infiltration of the capsule of the affected joint with local anæsthesia and active mobilisation Similar methods could be employed usefully in the treatment of recent sprains and of painful scars He then showed two patients who had been treated for *sciatic scoliosis* Immobilisation of the lumbosacral spine in plaster-of-Paris jackets, applied with the patient suspended or bending forwards, had given the most satisfactory results

Dr STAERMOSE gave a brief review of *coalitio calcaneo navicularis* Though it was certain that in many people this condition represented no more than a symptomless anatomical anomaly, it was occasionally found in association with spasmodic flat foot Excision of the bridge between the two bones and the interposition of part of the muscle belly of the extensor digitorum brevis usually cured the peroneal spasm

Dr FOGED showed many results of operations for *torticollis* The most universally satisfactory procedure had been open division of both heads of the sternomastoid just above the clavicle followed by a long period of daily stretching and re education

Dr CHIEVITZ spoke on the geographical distribution of tuberculosis in the Danish population and discussed the relationship between human and bovine types in surgical lesions The majority of these were due to the bovine type

A brief symposium on *osteoarthritis of the hip* followed Dr MORVILLE dealt with the classification of the disease Dr BERNTSEN described his method of drilling (' forage) the femoral neck and head—the procedure described originally by Graber Duvernay Very considerable relief of pain had followed this simple operation in over 60 per cent of his series of patients suffering from osteoarthritis of the hip Dr **Thierkelsen** analysed the indications for and results of, ' shelf operations performed in adult life for congenital subluxations of the hip Unlike British surgeons he had found the operation satisfactory in relieving pain and increasing stability

STOCKHOLM

Two mornings were spent at the new Karolinska Institutets Orthopediska Klinik Vanföreanstalten where Prof J H Waldenström and his colleagues and assistants presented a most stimulating programme

Prof **Waldenström** showed his best results of *arthroplasties* on various joints and these evoked much applause Concerning arthroplastics in general, he said

> The treatment is as we all know difficult But the difficulty lies not only in carrying out the operation skilfully but as much in deciding which cases are suitable to operate on. It should be undertaken only on the earnest request of the patient and only after the surgeon has assured himself that the patient will really get more use from a mobile joint than from his present stiff one We keep all these patients in hospital for some time before making a decision not only for the purposes of physical examination but also which is still more important to get an impression of their mentality and their reaction The post-operative treatment is painful and the patient must not only submit to passive movements but he must also carry out energetic active ones many times each day in spite of pain.

Later he presented some of his views on certain hip conditions of which he has made a life long study

These included *coxa plana* (pseudocoxalgia) and *coxa magna-valga-luxans* He attributes the latter to a mild local inflammatory process possibly tuberculous in some patients which results in overgrowth of the femoral head, so that it is no longer contained completely within the acetabulum He also performed the operation which has been most successful in his hands for *recurrent dislocation of the shoulder*—i.e the insertion of an autogenous bone graft into a niche along the anterior margin of the glenoid (Eden Hybbinette operation)

Dr **Friberg** read a paper on *spondylolisthesis* which is now being recognised more frequently in Sweden When it was causing symptoms he advocated fusion of the slipping vertebral body to the spinal segment immediately distal to it through an abdominal transperitoneal approach. He performed his own modification of this operation on a patient during the meeting

Dr **Knutsson** gave an account of the radiological findings in *sacralisation* of the fifth lumbar vertebra He pointed out that symptoms could arise not only from arthritis in the joint between the sacralised transverse process and the sacrum but also from arthritis in the smaller intervertebral joints of the lower lumbar segments Dr Knutsson also demonstrated radiograms of many other bone and joint conditions The high standard of radiographic achievement in this clinic was commented on by the visitors

Dr **Silfverskiold** described the condition known as *chondromalacia patellæ* and its treatment He regarded it as the commonest form of internal derangement of the knee and believed that the cartilage of the patella was the first in the body to undergo degenerative changes The clinical picture was crepitation between the patella and femur on movement associated with attacks of pain and swelling and peripatellar tenderness For mild lesions he advises conservative measures and for more advanced ones excision of the damaged cartilage in part or in whole covering the raw area with a free fascial graft About 70 patients had been operated on and the majority had perfect function Some of them were demonstrated

Dr **Nilsonne** showed some of the results of the operative treatment of infantile or *congenital coxa vara* He had performed a wedge osteotomy in the trochanteric region on the surprising total of 60 patients suffering from this condition His best results were in those patients on whom the osteotomy had been done between the ages of six and eight In these circumstances successive radiograms showed that the femoral neck had reconstructed itself over a number of years until eventually the hip could not be distinguished from the normal either by clinical or X ray examination

Miss **Hojer**, director of the Cripples Educational and Training Establishment spoke on the arrangements in Sweden for the rehabilitation of the cripple and his disposal in lucrative occupation The whole scheme—which embraces workshops boarding schools and salaried social workers—is subsidised by the State grants up to about half of the total expense

Other short papers were read on the *syndrome of the scalenus anticus and cervical rib* by Dr **Wiberg** on *congenital ulnar deviation of the fingers* by Dr **Lundblom**, and on the results of the shelf operation for *congenital subluxation of the hip in adults* by Dr **Severin**

INCIDENCE OF DIGESTIVE DISTURBANCES IN BUS-DRIVERS AND CONDUCTORS

Various occupational factors have been put forward at one time or another as responsible for an excess of digestive disturbances amongst busmen—irregularity of mealtimes speeding up with added nervous strain cramped and unchanging posture at work the inhalation of carbon monoxide from the exhaust fumes The special committee of the Industrial Health Research Board whose report has just been issued[1] took the view that it would be extremely difficult to direct inquiry into these or any other causes until the question of incidence had been settled. The initial investigation had therefore to be statistical. An answer was sought to the basic question do omnibus workers suffer from digestive complaints more frequently or more severely (or both) than other groups of workers of similar economic and social position? As a sickness rate is the end result of many influences much care had to be given to the choice of the group that was to be used as a standard of comparison with the busmen The choice finally made was the tramwaymen who in the opinion of the Trade Union representatives on the committee were less prone to gastric illness than the busmen.

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[1] An investigation into the sickness experience of London Transport Workers, with special reference to digestive disturbances Industr Hlth Res Bd No 79 London: H.M. Stationery Office. 1937 Pp 33 6d.

For these two groups of operatives was extracted (from the sickness records of the London Passenger Transport Board, available under the National Health Insurance Acts) the sickness experienced over five years, 1925–26 and 1933–35. It was considered that the results would be more reliable and more rapidly obtained if attention were devoted only to the more serious illnesses experienced; the periods of illness utilised were thus all those of 15 days or more, the relatively large mass of short periods of incapacity being ignored. Even with this limitation it was necessary to analyse over a million and a quarter days of sickness. By taking out the records for the earlier years, 1925–26, Mr. A. Bradford Hill, D.Sc., who undertook this analysis for the Board, hoped to see whether the sickness incidence had changed in type and volume with changing conditions of work and environment. This proved impossible, as the diagnosis of the cause of sickness was missing in a very large proportion of the earlier periods. His analysis is, therefore, confined to the 853,284 days of illness recorded in the later years, 1933–35, for which a diagnosis of cause was available. The diagnosis that had perforce to be used was that given by the panel practitioner on the first certificate of incapacity. Dr. Hill admits that wide errors may result even when a broad group of diagnoses are taken as one comprehensive gastric group, but he argues that there is no reason to suppose that the errors are more numerous in one occupational group than another. A special small scale investigation of the question gave support to this argument. He also points out (p. 8) that what has been investigated is what has been termed "gastric" on the panel doctors' certificates, and whether those diagnoses ought in fact to relate to, say, diseases of the nervous system is not in this inquiry very material. The answer to the initial question must be simply that busmen do or do not suffer unduly from diseases attributed to gastric causes by their medical attendants. Hospital data would undoubtedly give a more accurate account of causes of illness, but for several reasons it was concluded that such data are "an unpromising, if not impracticable, means of inquiry." In general Dr. Hill concludes that the unreliability of the diagnoses available cannot be readily invoked as an explanation of the differences he finds between the sickness attributed to gastric causes amongst the omnibus and the tramway operatives.

The differences found are these. At all ages, making allowance for the different age distributions of the groups of workers, the omnibus drivers had in 1933–35 a relative excess of gastric sickness—i.e., in proportion to sickness from all causes—of 12–14 per cent. over the figures shown by the tramway drivers; the omnibus conductors had a relative excess of 15–18 per cent. over the figure shown by the tramway conductors. Put in another way, roughly one day in six and a half of the total days of sickness—i.e., sickness of over two weeks' duration—was attributed to gastric causes amongst the omnibus workers; if they had had the same experience as the tramway workers the ratio would have been one day in seven and a half.

The relative excess of gastric sickness amongst the omnibus workers varies considerably with age. With the drivers it was apparent only at the ages 30–49 at which it amounted to some 20 per cent.; with the conductors it was mainly derived from ages 20–39 at which it amounted to 34–35 per cent. At these ages the sickness experience of the omnibus workers from all causes was not unfavourable in comparison with that of the tramway operatives. At the older ages of working life both the total and the gastric sickness experiences of the omnibus workers were in excess of those recorded by the tramway groups, but there was no evidence of a relatively greater liability of the former to gastric illnesses. The age groups in which the relative excesses of gastric illness was found amongst the omnibus workers are numerically important. Dr. Hill points out that about three quarters of the total number of omnibus drivers are of ages 30–50 and about two thirds of their conductors are of ages 20–40.

His final conclusion is, therefore, as follows:—

> Taking only sicknesses of over two weeks' duration and a wide group of diseases as attributable to gastric causes (and the original data did not, it was held, justify any subdivision of this group) it is found that there was, in 1933–35, some excess of gastric illnesses recorded amongst the omnibus workers as compared with the tramway workers in those age groups to which the majority of the former belong, though at these ages the total sickness experience, from all causes, of the omnibus workers was rather more favourable than that of the tramway workers.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

ABOLITION OF HOSPITAL FEES

At a recent meeting of the public health committee of Edinburgh town council, it was proposed that "fee paying in the city of Edinburgh hospitals, as far as Edinburgh ratepayers are concerned, should be abolished." It was pointed out that if a ratepayer was unable to pay 25*s.* a week, he was relegated to public assistance and his case was investigated as if he were a pauper. The charge brings in only £20,000 a year, which corresponds to 1*d.* in the £ on the rates. After further information has been collected, the matter is to be reconsidered by the committee.

Many complaints are made about the necessity for paying hospital fees at the municipal hospitals. One reason for these complaints is that the chief hospitals of the city are voluntary, and these as yet make no charge to patients. The public are in fact accustomed to having the very best hospital facilities provided for nothing; and even if the voluntary hospitals were to introduce hospital fees, they would continue to admit certain patients free without making them feel that they were being treated as paupers. On the other hand, if the city authorities abolish hospital fees, the demand for beds in their hospitals will increase greatly. The municipal hospitals are already well filled, and there has been difficulty in obtaining enough nurses. It is unlikely, therefore, that the city authorities will agree to a change that will throw a heavy extra strain on the accommodation now available.

SHORTAGE OF NURSES

The difficulty of finding nurses for the three municipal general hospitals is referred to in Dr. John Guy's annual report as medical officer of health for Edinburgh. Most of those who have studied the problem insist that long hours of work, poor remuneration, undue discipline, and stiff examinations are the main causes which deter girls from entering the nursing profession. Dr. Guy draws attention to another possible factor—namely, the decline in the actual numbers of females in the 20–25 age-group of the population of the country The staffing of the hospitals used for the chronic sick which are not training schools approved by the General Nursing Council, presents peculiar problems Dr Guy suggests that a scheme which would enable nurses to divide their period of training between chronic and acute hospitals would be ideal, for experience in the nursing of the chronic sick is absolutely essential if a nurse is to be fully trained The alternative is to employ women unfitted for work in an acute hospital or for passing the State examinations but conscientious and considerate to the patients Those who are in touch with hospitals for chronic cases know how serious the difficulty of staffing them has become unfortunately there is no sign of the situation improving indeed it may become worse It is difficult to see how it is to be met.

VETERINARY SCIENCE

Speaking at the annual prize distribution of the Royal (Dick) Veterinary College Edinburgh Prof W T Ritchie first paid tribute to the genius and patriotism of William Dick who founded a veterinary hospital 114 years ago The preservation of health was now the common aim of veterinary and medical practitioners the veterinarian waged incessant war against tuberculosis, and was the first line of defence against foot-and mouth disease anthrax, glanders, and hydrophobia It was a good omen that the Treasury were becoming increasingly sympathetic to the endowment to research in animal diseases.

Sir Thomas Hudson Beare who presided referred to the steady increase of students at the College and the inadequate accommodation now available The Development Commissioners last year offered £20,000 provided the College raised a similar sum and he made an appeal for further subscriptions

MENTAL HYGIENE

Mr Clifford W Beers gave an address at Edinburgh University last week in which he described the improvements that have taken place in the treatment of mental disease during the past thirty years Prof. D K. Henderson, in introducing the speaker said that Mr Beers had a long and painful and serious illness thirty years ago After recovering he told his story in his book— A Mind that Found Itself " He then founded the mental hygiene movement which had developed so greatly that 54 countries were represented at the congress in Washington in 1930

HONOUR FOR LADY MACKENZIE

On July 2nd the degree of LL.D was conferred on Lady Mackenzie C.B E , widow of Sir Leslie Mackenzie who was medical member of the Scottish Board of Health from 1919 to 1928 At a meeting held a few days previously at the Carlyle Hostel, Lady Salvesen presented Lady Mackenzie with academic robes given by friends and fellow workers and by various organisations with which Lady Mackenzie has been closely connected The speakers included Dr J B Clark who spoke about her work for education and Miss Alexia Jack who spoke about her efforts to improve the conditions of mentally defective children In her reply Lady Mackenzie told how as a member of the School Board in 1906 she had secured the appointment of the first school medical officer in the city His salary was provided by saving £400 a year on the arrangements for washing school towels

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IRELAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL MEN AND THE GENERAL ELECTION

Although the complete returns of the election are not available at the time of writing the fate of some if not all of the medical candidates is known The last Dáil contained six medical men ; the new Dáil will contain at least seven. Of these seven three sat in the last Dáil—namely Dr James Ryan Minister for Agriculture Dr C Ward parliamentary secretary to the Minister for Local Government and Public Health, and Dr T F Ó Higgins Of the others three have been members of Dáils previous to the last—namely Dr F Humphries, Dr Myles Keogh, and Dr S Tubridy A newcomer to the Dáil is Dr Joseph Hannigan, who has been returned for the Southern division of the City of Dublin Two medical members of the last Dáil have been defeated—Dr J J O'Reilly who sat for County Cavan and Dr P J O'Dowd who sat for County Roscommon—and two other medical candidates have met the same fate—Dr W O Sullivan in County Kerry and Dr P Doyle in Leix Offaly

PANEL AND CONTRACT PRACTICE

The Extension of Health Insurance

Broadsheet 102 issued by P E P [1] is chiefly devoted to the question whether and if so how the very serious gap in the provision through health insurance of medical services for the mass of the population can be filled. It is held that the medical services now provided are deficient in three important respects (1) the quality of the service that can be given under present conditions by a busy insurance practitioner is far below the best that modern medical practice could provide (2) there is no specialist treatment, apart from the very limited provision made under the additional benefits and (3) the insurance system does nothing for the dependants of the insured or for persons who though not eligible for insurance are of the same economic class as the insured The broadsheet deals only with the third shortcoming which it is thought is the most serious. The need for this *extension* of the health insurance system is so generally *recognised* that large numbers of those who would be affected by it are now attempting to find a substitute in various methods of voluntary insurance In addition to some 50 public medical services providing medical care for over 400 000 *persons*, there are doctors clubs, friendly society medical services, works clubs and various other "contract *arrangements* all trying to meet a need that could *more* effectively and economically be met under the State scheme The number of dependants of insured persons in Scotland is estimated by the Government Actuary at 1 570 000 and if the ratio of dependants to insured persons is the same in England and Wales as in

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[1] *Planning* June 29th 1937 Political and Economic Planning 16 Queen Anne's Gate London S.W 1

Scotland the total number of dependants in Great Britain would be 14,600,000 The cost of extending medical benefit to dependants is estimated by *Planning* at £8,800,000 on the assumption that the capitation fee would be 9*s*, and the cost per head of drugs, mileage, and administrative charges 4*s* It is suggested that the cost should be shared equally between he State and the insured persons, which would ncrease the weekly contribution by 1 3*d* Mr Colin Clark, in "National Income and Outlay," estimates hat the number of workers in Great Britain earning ess than £250 per annum but outside the insurance system is 1,030,000, and if medical benefit were extended to these persons and their dependants, estimated at 900,000, the cost, allowing a capitation fee of 9*s*, would be £1,160,000 Assuming the cost to be shared equally between the workers and the State, it would entail a weekly contribution of 2 6*d* from each worker The total cost of extending medical benefit to these workers and their dependants, and to the dependants of the insured, would on these calculations be £10,000,000, of which the State would pay £5,000,000

This estimate is probably too low, since the allowance for drugs is based on the Scottish cost, 1*s* 11½*d* per person, and the cost in England and Wales is 3*s* 1*d* But accepting it as not far out, it may be argued that the money could be more profitably spent in other ways—e g, the provision of adequate diets for young children or an extensive development of nursery schools This question is reserved for consideration in a Report on Health Services shortly to be issued by P E P But without leaving the field of health insurance it may reasonably be doubted whether the extension of the existing restricted range of medical services over a wider section of the population is the development that is most needed The first criticism of the insurance medical service made by P E P is that the quality of the service given by "a busy panel doctor in contemporary conditions is far below the best that modern medical practice could devise" Though it is incorrect to assume that the efficiency of an insurance practitioner varies inversely with the size of his practice, for some of the most effective work is done in the larger practices, it must be admitted that taking the service as a whole there is need for a higher standard of professional work The Royal Commission on National Health Insurance recommended that the first development of the insurance medical service should be to supplement it by coördinating the work of the practitioners with that of colleagues experienced in special fields of practice This the Commission thought would not only enlarge the range of service but improve the efficiency of the practitioners It may well be that it would be better to improve the quality of the existing service before increasing the quantity of work required from it This, however, does not detract from the value of this useful broadsheet, which is full of interest to medical and non medical readers

The Varying Quality of Mercy

A year ago the London medical service subcommittee dealt with thirteen practitioners who had been consistently remiss in returning forms of medical record relating to insured persons who had transferred to the lists of other doctors Several of these doctors admitted that they had disregarded the ordinary applications for the return of medical records and had awaited schedules of outstanding records after the end of the quarter but upon having received promise of amendment the committee decided in one case only—and that in respect of a practitioner who had twice previously been before the subcommittee—to recommend the withholding of money, and then only to the extent of £1 More recently a London practitioner submitted no acceptances for six months and then sent in 101 medical cards Although he had been warned previously, he was let off with a homily, the committee indicating that a repetition of the offence would compel a more serious view of the matter A doctor in the Isle of Ely has received different treatment from his local insurance committee A special meeting of the medical service subcommittee was convened, we learn, for the purpose of considering the questions of delay on the part of the doctor, and following a detailed statement concerning accepted medical cards, recommended, and the committee decided in connexion with the seven medical cards received on a day in February, that the Minister should be asked to withhold £5 At this rate the London doctor ought to have had £70 withheld But worse was to follow, for this practitioner had been remiss in returning medical records For this misdemeanor the committee decided to recommend the Minister to withhold £15 The last word lies with the Minister, who will no doubt be aware of the varying quality of mercy Practitioners must realise that the prompt submission of acceptances and medical records is not merely a troublesome piece of red-tape but is an essential part of a rather intricate machine

The National Formulary

The British Medical Association is to be asked to consider the issue of a revised edition of the National Formulary The London medical benefit subcommittee in making this request points out that the 1933 issue of the formulary brought it into line with the B P 1932 The subsequent publication of the B P Codex (1934) had modified the position considerably, the Codex had been adopted in April, 1935, but the drug tariff standards had remained as they were Preparations bearing the same name in the two publications might differ in composition, and the same name might be used for two different preparations Other factors to be taken into consideration are the Pharmacy and Poisons Act, 1933, various alterations in the Dangerous Drugs Regulations, and the B P Addendum of 1936

THE LANCET 100 YEARS AGO

July 8th, 1837, *p* 544

From an article entitled "Facts regarding the Statistics of Insanity (Abridged from Browne on Lunatic Asylums)"

females are, perhaps, most subject to insanity, both before and after the consummation of marriage This has been attributed to their peculiarity of constitution, delicacy of frame, and susceptibility of mind, but if this set of causes be confined in their operation to women, so is a large proportion of the physical causes and the influence of ambition, speculation, and dissipation confined in their operation to men No explanation of the inequality can be received on these grounds The vicious and imperfect education of females, however, may afford "an open and easy road for the enemy to enter," tending as that education does, in the majority of cases, to arrest the development of the body, overtasking some of the mental powers, and leaving others untouched and untaught, while, so far as it is moral, it is directed to sordid and selfish feelings, and substitutes a vapid sentimentalism for a knowledge of the realities and duties of life

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM A READER

II

THE study of tricks designed to add undeserved prestige to ideas and arguments has been unduly neglected More attention has been paid to the allied phenomenon of intellectual snobbery, and this preoccupation has obscured the merits of the lesser art as material for the serious student The two vices are by no means identical intellectual snobbery is practised for the glorification of the thinker but prestige is stolen for the glory of the thought Stealing is perhaps too sharp a word for the practitioners may be unconscious of their misdeeds Like shop-thieves they may be either moneyed kleptomaniacs or needy professionals so the vice may appropriately be named prestige lifting It may be observed in its most primitive form when the truth of a not too credible statement is boldly supported by the declaration that it appeared in a newspaper I am chiefly concerned with its more complex manifestations in the scientific world The favourite terrain of the prestige lifter is in relatively watertight sciences like physics or mathematics. To biological workers the prestige of these sciences is enormous: to the average reader mathematics for example has not only the hall mark of exactitude but the impressiveness of the unfamiliar Time and again have I seen medical students recoil from a scientific publication that displays mathematics no more complex than fourth form algebra and yet cheerfully tackle a purely descriptive paper that is if they only knew it a far tougher nut to crack.

The lure of the graph, the fascination of the formula—all the biological journals testify to these I am far from denying the value of expressing a result in terms of an algebraic function which may be a highly convenient restatement of a fact But few are content to stop at that. The fact that a set of results fits a formula means no more than that a set of results fits a formula it may suggest more unfortunately it often suggests too much. The astronomers, some of them have been struck so forcibly by the neatness with which the stellar universe has fitted their mathematical conceptions that they have been led in Prof Hogben's words to award God an honorary degree in mathematics.

Unfortunately mathematics implies exactitude which some may think too high a price to pay for prestige The resistance to the recent suggestion that medical students should acquire some idea of the bases of statistical reasoning is not difficult to understand For medical men, with the living reality at the end of the stethoscope or under the tip of the scalpel rather resent the tyranny of the algebraic symbol A good many medical arguments are weighted by observations that are not directly relevant but appear to be so because there is a tacit assumption of premises which are in fact unwarrantable and to strip a hard won conclusion of all but its quantitative values often reveals a woefully inarticulate skeleton

* * *

Nowadays there is a good deal of perfectly legitimate adoption by one science of techniques belonging to another; but though much prestige is lifted [illegible] misapplied energy in this direction it is scarcely worth more than noting in this survey The literary side (using the term as a convenient label for all non-scientific attempts to communicate something) is rich in prestige lifters

Mountaineering would appear to have a good enough raison d'être as a sport and yet occasionally in the records of some climb one finds insistence on the valuable scientific results that are alleged to justify the conquest of a peak In one account of a Himalayan expedition the author who in the introduction laid particular stress on the scientific side solemnly explained that the oxygenation of the tissues depended on the number of hæmoglobins in the blood The feebleness of the claim to science lies not so much in the ludicrous mistake as in the failure of the writer to take the trouble to get his statement verified. This striving after scientific prestige is the more surprising since mountaineering has developed a strong religion prestige of its own Its growth is reflected in the mountaineering literature of the past eighty years Whymper scrambled in the Alps because he was commissioned to make a set of engravings of scenery and John Tyndall at any rate partly because of his interest in natural philosophy These pioneers just liked mountains Later in the nineteenth century the natural desire to be the first up a peak is sublimated into a conviction that only in the quiet untrodden places can the unpleasant rope-festooned guide bullied tourist be avoided. (The grumbles of the mountaineers about the invasion of their haunts by the vulgar reveal a naïve blindness to the consequences of publishing their exploits) So far glimpses of the cult of exclusiveness appear only occasionally in the writings of mountaineers But in the beginning of this century the climber emerges as one having a peculiar code of behaviour and an ethic There is that which urges the soul of man to impose himself on the lonely peaks (by a masterly under-statement, the more inaccessible and impressive mountains become 'high hills') and the peaks by a pantheistic reciprocity bring out something fine in the climber Mountain worship now is well established I have heard a priest of the cult exhorting a gathering of undergraduates to keep the flame bright and untainted: the necessity for the exhortation being apparently that with the increasing cheapness of communication and travel, the lower classes were becoming mountaineers for the sheer vulgar delight of climbing mountains

* * *

The finest examples of prestige lifting can be found among those who in a final analysis are Science's bitterest opponents At the time of the American Civil War the southern States chose the romantic fantasy of race-purity as the scientific support for their political attitude Land and slave-owning conferred on the lately settled immigrants aristocratic qualities that forever separated them from the up-to-date pushing Yankee. The Nazi more obscurely uses the fantasy to justify a return to one of the cruder Norse mythologies The annals of the stockbreeder are richer in prestige than the turgid prose of Houston Stewart Chamberlain, and the menace of the non [illegible] a better reason for choosing a blond and

MAN SINGH MEDICAL COLLEGE L
Accn No 13
Date
Dr. Robert Heilg Library,
S. M. S. Medical College

virile giant for a Leader than all Carlyle's panegyrics on Hero worship

* * *

Perhaps it is paucity of imagination that lies at the bottom of most prestige lifting Any communication of organised knowledge, made with a minimum of ambiguity, is scientific, and outside this realm there are few convincing approaches to that hypothetical reservoir of intuitively apprehendable knowledge postulated by the mystics Poetry, painting, music are all pressed into service, but man cannot convince by Art alone

Mary Eddy boldly appropriated the word " Science " for a title, and couched the whole of her religious argument in the form of a scientific thesis, with the full paraphernalia of discussion, conclusions, and finally experimental proof No facet of the scientific method is omitted, except mathematical demonstration In one place the narrative is interrupted for an explicit statement of the fundamental premises of her system, set out as a kind of manifold syllogism or a problem in inference,

> "God is All-in-All
> "God is good, God is mind
> God, Spirit, being all, nothing is matter"

with a final conclusion that matter is nothing Mathematics is not entirely neglected, for " the metaphysics of Christian Science, like method in mathematics, proves the rule by inversion There is no pain in Truth, and no truth in pain," and so on until we arrive at " There is no matter in good and no good in matter "

* * *

D H Lawrence was more explicitly anti science, but none the less noteworthy as a scientific prestige-lifter He formulated the doctrine that the mind should be the tool, not the master, of the body and its emotions For the most part he was content to let his novels preach for him, and the earlier ones, like "Aaron's Rod" and "The Lost Girl," mirror his spiritual development Both begin with clear, mentally apprehended pictures of his early life in the Midlands, and finish in dealings with foreigners into whose incomprehensibility he could read the workings of dark, primal energies The Mexican Indians eventually became for him the symbol of living, as opposed to thinking, humanity He would have been angry at any attempt to rationalise their mystery But his resentment of the supremacy of mind needed expression through more than his genius as a poet and novelist, and he was driven to make specific repudiations of science He was revolted, for example, by his own conception of Freudian psychology He says, "Freud explored with his ideal candle the cavern whence issues the stream (of the conscious)—and came back, with knowledge of the huge slimy serpent of sex, heaps of excrement, and myriad repulsive horrors" In place of this tabloid misconception he offers a psychological system, governed within the body by a tetrad of sympathetic and separatist ganglia, one pair above, the other below the diaphragm, a system with its own peculiar flavour of modern medicine and medieval symbolism

Angry repudiation often implies a feeling of inferiority, and a clue to Lawrence's attitude may perhaps be found in one of his outcries against the tyranny of scientific fact It was to the effect that "the moon is not a cold, dead world, it is phosphorus clotted on poles of radium" For all his intuitive comprehension, he had only one scientific image to substitute for another, and in repudiating the cold objectivity of selenologists from Galileo to Nasmyth, he ran straight into the arms of Mme Curie He was, in fact, an ignorant romantic Science threatened an attitude that he was always attempting to support by what were in effect scientific methods But in his understanding of Science he never got beyond the stage of the Boy's Grand Cabinet of Chemical Marvels, with a book of instructions that reads like a shilling primer of conjuring Phosphorescence and radio activity had for him the impressiveness of the slightly bogy bogy, the interest of something actually happening He was incapable of seeing that the problems of molecular structure in dead crystals of rock salt might be as fascinating as the luminescence of a grinning skull crudely scrawled in yellow phosphorus on a coal-cellar wall.

THE SERVICES

HONORARY PHYSICIANS TO THE KING

Col H C **BUCKLEY**, M.D , F R C S Edin., honorary surgeon to H E the Viceroy of India, and Col D C V **FITZGERALD** M C , L R C P I , Indian Medical Service, have been appointed honorary physicians to the King, in succession to Maj -Gen Sir Cuthbert A Sprawson C I E , M.D , F R C P Lond., and Maj -Gen C W F Melville, C B , M.B , F R C S Edin , Indian Medical Service, who have retired

ROYAL NAVAL MEDICAL SERVICE

Surg Rear Admiral Percival T Nicholls, C B has taken over the duties of Medical Director General of the Navy in succession to Surg Vice Admiral Sir Basil Hall K.C B , O B.E , who is retiring after the usual three years

Surg Rear Admiral Nicholls has been 36 years in the Navy and was promoted to his present rank in 1932 He has been medical officer of Sheerness Dockyard and of Portsmouth Naval Barracks and has had charge of the naval hospitals at Malta and Haslar and was in H M.S *Hogue* when she was sunk in September 1914 Subsequently he was medical officer of the *Greenwich* destroyer depôt ship and of the battleships *Agamemnon* and *Valiant*

Surg Comdrs to Surg Capts F C Wright (*Drake*) (R N Hospital Plymouth), and H E Y White C V O , O B E , K.H S (H M Yacht *Victoria and Albert*)

Surg Capt P L Gibson to R N Barracks Chatham, for duty as senior medical officer

Surg Comdrs J A Cusack to *Ganges* W J Morris to *Drake* for R N B , and A W McRorie to R N Recruiting Headquarters

Surg Lt Comdr E J Mockler to *Victory* for R N B

Surg Lt Comdr (D) H N V Barnes to *Drake* for R N B

Surg Lts F G V Scovell to *Pembroke* for R N B , J C Gent to *Victory* for R N B A Long and D Gunn to *Pembroke* for R N B , T F Davies to *Pembroke* addl for R N Hospl , Chatham , and R M Kirkwood to *Vernon*

The following have been appointed as Surg Lts for short service —

G T Holroyd, St Thomas s Hospl , W H E McKee, Trinity *Coll , Dubl* R T *May, Cambridge Univ and St Thomas s Hospl , B Ridgway, Bristol Univ* , M F Sheehan, University Coll , Dubl , and W Wilson, Manchester Univ

Surg Lts (D) J B Knight and F B Gamblen to *Pembroke* for R N B

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt -Comdr to Surg Comdr S B Borthwick

Surg Comdr G F Abercrombie to *Exmouth*,

Surg Lt Comdr J F Heggie to *Drake* for R N B

Surg Lt Comdr (D) F D Manners to *Victory* for R N B

Surg Lts W T Campbell to *Victory* for R N Hospl. Haslar and E G Brewis to *Caledonia*

ROYAL ARMY MEDICAL CORPS

To be Bt Col Lt Col G Wilson O B E M.C

To be Lt Cols Maj E B Marsh M C and Maj E C Linton

Lt Col H R Edwards having attained the age for retirement is placed on retd pay

Maj G A. Bridge M C to be Lt Col

Capt J W Eames to be Maj Oct 1st 1030 (Substituted for the notifn in the *Gazette* of Oct 20th, 1936)

Short Service Commissions —

Capt J H Caverhill resigns his commn

Lt (on prob) R L Townsend is secd. under the prov of Art 213 Royal Warrant for Pay and Promotion 1031 July 1st

Lt W Laurie resigns his commn July 3rd

Supernumerary for service with O T C Lt S M Whitteridge (empld U lv of Lond Contgt (Med Unit) Sen Div O T C) resigns his commn. June 4th

General List —J E Wells to be Lt with seniority June 8th.

The successful candidates in the examination (in written subjects) of officers with a view to promotion in the Regular Army and Dominion Forces, which was held at Stations abroad (excluding India) in March last are —R Army Medical Corps : Majors W L S Cox M C W B F Orr and C E Eccles ; Capts M S W Bisdee and J D P Macpherson R Canadian Army Medical Corps : Major W L Coke Army Dental Corps Capts K. H Coulton and R H Green

TERRITORIAL ARMY

Capts W Niven and M Stoddart Scott to be Majs

Lt C H Imrie to be Capt

K. S Thompson (late Cadet Epsom Coll Contgt Jun. Div O T C) to be Lt

J R Heslop (late Cadet Serjt Barnard Castle Sch Contgt Jun Div O T C) to be Lt

ROYAL AIR FORCE

The undermentioned promotions are made —Squadron Leaders to be Wing Comdrs. Edwin Noel Hillman Gray Thomas Vincent O'Brien Hugh Wolfe Corner and Frank Paul Schofield Dental Branch —Wing Comdr to be Group Capt Lawrence Somerville-Woodiwis Squadron Leader to be Wing Comdr : Gordon Arthur Ballantyne D.F C Flight Lt to be Squadron Leader Michael Joseph Pigott

Squadron Leader G E Church to R.A.F Station Cranfield for duty as medical officer

Flight Lts. J A Kersley to R.A.F Hospital Cranwell and R N Kinnison to Princess Mary s R.A F Hospital, Halton

INDIAN MEDICAL SERVICE

Indian Medical Department —Lt (Sen. Asst Surg.) E G Crundon retires April 7th

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CORRESPONDENCE

THE REVISED MEDICAL CURRICULUM

To the Editor of THE LANCET

SIR,—The letter under this heading in your issue of June 20th from Sir Ernest Graham Little Member of Parliament for London University contains some misconceptions that should I think be corrected.

(1) The resolutions of the General Medical Council to which he refers were adopted by the Council in May of last year In the recent May session the subjects under consideration were the registration of students and the date at which the regulations should come into operation—now fixed as Nov 1st, 1038

(2) These resolutions do not prolong the duration of professional study It is to be as it has been since January 1023 five years after passing in addition to matriculation or its equivalent an examination in elementary chemistry and physics In the University of London no examination in chemistry and physics other than the first M.B examination is required and the final M.B can be taken five years after that has been passed or six years after matriculation The new requirement which has been in operation since 1023 is not that the student shall complete his education in chemistry and physics before coming to the medical school, but that before he begins the study of anatomy and physiology he shall have a knowledge of elementary chemistry and physics and that the duration of professional study should then be not less than five years

(3) An academic year is a period from the beginning of October to the end of June not any period of nine months duration Five academic years cannot be completed in less than 57 months The resolutions specify that during the three clinical years study should not be confined to the months from October to June but should be continuous throughout the year In London medical schools this has been customary for at any rate more than fifty years The provision that the period of clinical study should be three calendar years does not add nine months to the curriculum as it is being carried out in the schools of the University of London nor does it add one

Perhaps I on my part may have misunderstood Sir Ernest s letter but it seems to me to imply that a student should be able to become an efficient practitioner without ever having had his attention called to the importance of dietetics therapeutics prescribing, physiotherapy principles of nursing child welfare psychology radiology as applied to medicine and surgery disease in infancy and childhood dental diseases or of the statutory obligations of medical practitioners all of which he rather misleadingly says have been added to the special subjects of the old curriculum the one *that is* which is still in force till November next year

I am, Sir yours faithfully

J B LEATHES

Chairman of the Education Committee of the General Medical Council

Oxford June 9th

To the Editor of THE LANCET

SIR,—In your issue of June 26th Sir Ernest Graham Little says that the medical profession is becoming practically closed except to those who have abundant financial means Prof. G A Clark replies that this can easily be shown to be an exaggeration by investigation of the occupation of the parents of medical students at least in provincial medical schools Perhaps this question can be approached from a different angle

The bearings of this economic aspect of medical education on the student body are brought out in the recent report of the University Grants Committee for the period 1020–30 to 1034–35 The number of assisted students is a guide to their economic status For the year 1034–35 the following were the percentages of assisted students to the total of full-time students —

	Per cent
Oxford and Cambridge Universities	43 4
London University, excluding Medical Schools	34 3
London University Medical Schools	13 7
Provincial Universities and three Independent University Colleges	45 7
England	39 2
Wales	57 0
Scotland	45 1

It is obvious from these figures that at least in the case of the London University medical schools, which are numerically the most important group, the students are not widely drawn from the community, and certainly not nearly as widely as in the case of arts and science students No separate figures are given for the provincial medical schools but all the figures quoted show a glaring disproportion when comparison is made with the 13 7 per cent assisted students in the London schools

The economic aspects of medicine have an important bearing upon its educational problems The lengthy training of the medical student, the cost of this training, the many years that must elapse before he becomes self-supporting, and also the capital outlay necessary to start practice, all tend to restrict the field from which the medical student is drawn. This restriction is not always obvious but it is quite definite when comparison is made with the faculties of arts and science

Educationally, medicine is becoming increasingly linked with the university, and to those of us who believe that medicine has educational as well as vocational duties towards the *community*, the imposition of severe economic tests seems wholly *undesirable* The real test of admission as a student should be ability, and not ability to pay In the other university faculties—arts, science, and theology—economic tests are extremely light when compared to those of medicine A broader basis of admission would make medical education as a whole, and also medical administration in general, more adaptive to contemporary conditions more willing to make experiments, and more useful to the community

It is not easy to view some of the current trends in medical education with complacency With every revision of the curriculum, the student is always given more to do instead of less, and the general educational value of his training becomes of diminishing importance The abolition of severe economic tests on the student entry would, I believe, favour education as opposed to professionalism, and be one factor in bringing medicine and medical education into closer relationship with contemporary needs

I am, Sir, yours faithfully,

REGINALD T PAYNE

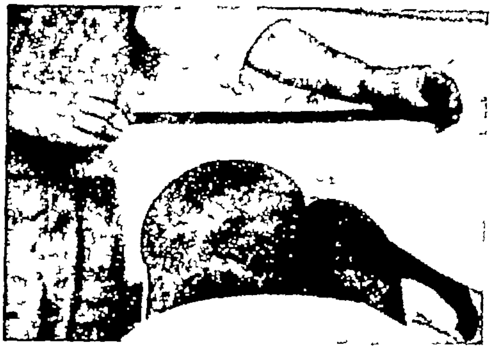
Harley street W July 3rd

GLUTEAL ANEURYSM

To the Editor of THE LANCET

SIR,—The article by Mr Deitch and Dr Rogan in your issue of June 26th leads me to send you this photograph and history

The patient was an Ethiopian, about 40 years old, who came to the Swedish Mission Hospital, Harrar during the recent war, complaining of enlargement of the left buttock He had just been discharged from prison and his general condition was considerably better than the usual for men of his type, although he had been in prison for six years The swelling was noticed first six years before he came to the hospital and had been increasing steadily in size No history of trauma at any time No pain, but great inconvenience due to the size and pulsation of the buttock On examination, a healthy man of good physique, no sign of anæmia, the size of the left buttock can be judged by comparison with the right buttock in the picture, the latter being normally developed, the whole left buttock was occupied by a pulsating tumour attached firmly to the pelvis, and giving a loud bruit on auscultation The skin over the buttock was healthy and there was no wasting of the left leg No history of syphilis Diagnosis gluteal aneurysm, apparently spontaneous



First operation ligation of internal iliac artery Forty-eight hours afterwards the tumour was firm with no pulsation and no bruit Second operation attempt to obliterate the sac This could not be done owing to the dense fibrous tissue and matting of the surrounding structures

Three months later the buttock was smaller and without pulsation

I am, Sir, yours faithfully,

KENNETH L BUXTON

Polzeath Cornwall July 5th.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 26TH, 1937

Notifications—The following cases of infectious disease were notified during the week Small-pox, 0, scarlet fever, 1631, diphtheria, 958, enteric fever, 21, pneumonia (primary or influenzal), 495, puerperal fever, 34, puerperal pyrexia, 139, cerebro spinal fever, 19, acute poliomyelitis, 8, encephalitis *lethargica*, 3, dysentery, 26, *ophthalmia neonatorum*, 96 No case of cholera, plague, or typhus fever was notified during the week

The number of cases in the Infectious Hospitals of the London County Council on July 2nd was 2994 which included Scarlet fever 746 diphtheria 810 measles 170, whooping-cough, 477 puerperal fever 16 mothers (plus 11 babies) encephalitis lethargica 284 poliomyelitis 3 At St Margaret's Hospital *there were 29 babies (plus 11 mothers)* with ophthalmia neonatorum

Deaths—In 124 great towns,* including London, there was no death from small pox, 1 (0) from enteric fever, 14 (4) from measles, 2 (0) from scarlet fever, 10 (5) from whooping-cough, 27 (1) from diphtheria, 50 (12) from diarrhœa and enteritis under two years, and 14 (6) from influenza The figures in parentheses are those for London itself

Measles was fatal in two cases at Birmingham and at Nottingham The deaths from diphtheria were scattered over 9 great towns 3 at Manchester Liverpool had 6 deaths from diarrhœa West Ham and Birmingham each 4 Sunderland 3

The number of stillbirths notified during the week was 296 (corresponding to a rate of 41 per 1000 total births), including 46 in London

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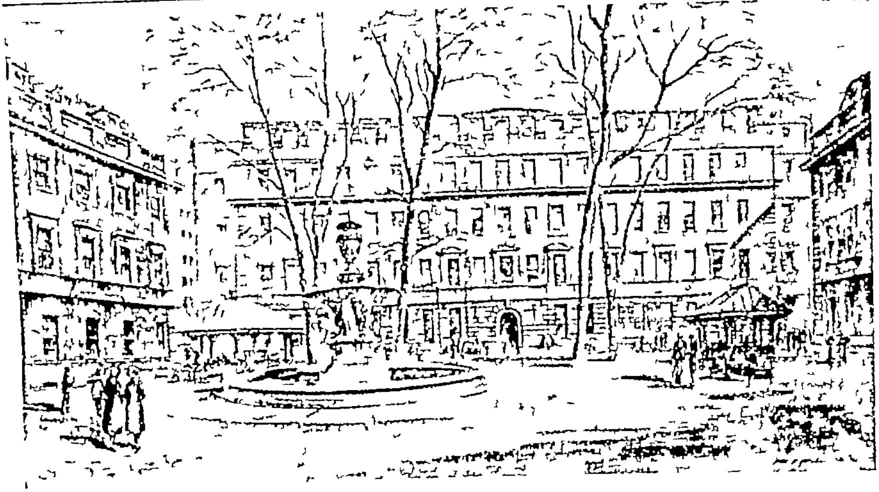
* Stanley U D (Yorkshire Riding) with a change of boundary bringing its population up to 52,067 has now become a great town

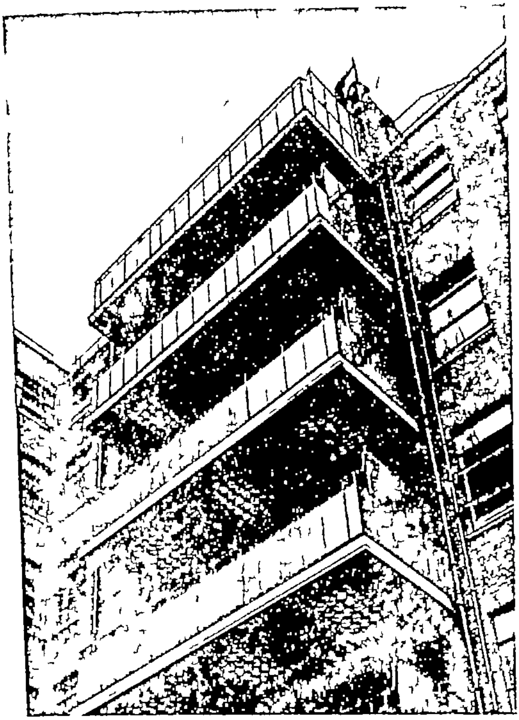


ST BARTHOLOMEW'S HOSPITAL

KING GEORGE V BUILDING

It is over ten years since it was decided that St. Bartholomew's Hospital with its 200 year-old wards and lean to operation theatres would have to undergo in Lord Stanmore's words a "most drastic reconstruction, and plans were made to house both the medical and surgical units in one great modern block with widely deployed wings instead of in several isolated buildings. The surgical wards and operating theatres were finished in 1930 and on Thursday of this week the first great step in the rebuilding of the hospital has been completed with the opening of the King George V Building by Queen Mary The new block is to contain the five general medical units with two wards each communicating directly with corresponding units in the surgical block, the five operating theatres occupying a separate wing This will leave the east block free for the special departments—the ear nose and throat orthopædic children's septic and additional gynæcological wards The scheme originally prepared by Mr T A Lodge of Messrs Lanchester and Lodge the architects has been modified in some respects In order that the new building should harmonise with the rest of the early eighteenth-century square part of the old block was to be retained but this was impracticable and the front is now faced with Portland stone of a similar pattern. In order to keep the same sky line when seen from the square the fifth floor has been set back.

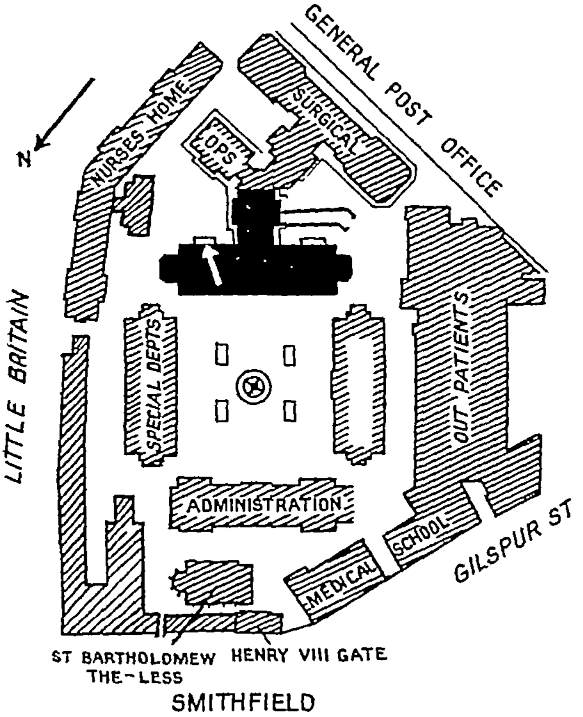
The site is that originally occupied by the old south block and since the new



By courtesy of the Architects' Journal

The sun balconies (indicated by white arrow in the plan) building is considerably larger careful planning has been necessary to ensure the maximum of light and air to the various rooms.

On the lower ground floor are placed comfortable rest rooms for the use of the relatives and friends of patients, with a canteen and lavatory accommodation. There is also a kitchen unit for the preparation of special diets and a number of service and store rooms. On this floor also is a new electrocardiographic department to replace the cramped unit in the basement of the west block; the apparatus is connected by wires to the various wards throughout the hospital. From the ground to the fourth floors is devoted to the medical wards and the necessary rooms in connexion with these. Each floor is divided into two units, male and female, each of 25 beds housed in one large ward of 23 beds and two single bed wards. The large ward has a glazed screen down the centre, allowing four rows of beds. Adjoining the ward are the sanitary units, comprising two w.c.'s, a bathroom, and a clean and a dirty sink room. These units are all tiled to a height of 7 ft. 9 in. in order to facilitate cleaning. The dirty sink rooms are particularly interesting for the electrically operated bedpan washers and sterilisers, designed by Mr. E. W. Monkhouse, the consulting engineer; one has already been in operation for a considerable time and has proved entirely satisfactory; there are also special bedpan warming cupboards designed by the architects. Opening off the central corridor leading to the ward is the sister's room, a linen room, a patients' clothes room, and a ward kitchen, in which there is a large built-in refrigerator and a gas cooker and radiator, while there is ample cupboard space. Special telephones are installed for communication between the kitchen and the sister's room. Behind each ward is a roomy sun bathing balcony, four of which are shown in Fig. 2. At the end of the corridor leading to the wards on each floor are examination rooms, staff rooms, nurses' lavatories, &c., common to the two units. On the fifth floor is a self contained isolation department of two 2 bed wards and three single bed wards and accessory rooms. Also at this level there are laboratories and a common room forming an extension of the Dunn Laboratories on the corresponding floor of the surgical block. Above this there is a solarium and a flat roof to be used for beds, part of which has a sun awning, formed of roller blinds for ease in operation.



Oxygen has been laid on from a central supply room on the lower ground floor to all single bed wards from the ground to fourth floors as well as to two points in each large ward; these are placed so as to make the supply available to four beds. Points are also provided in two wards in the isolation department. Similarly, suction apparatus is connected up to serve two beds in each large ward and all single bed wards. In the entrance vestibule on the lower ground floor there is a staff indicator board; this is electrically operated and interconnected with similar boards in different parts of the hospital so that switches at any board operate the lights on all boards. Fire alarm indicators for the surgical, operation theatre, and medical blocks are also placed at this entrance. Each large ward has an electrically operated staff call board for night superintendent and the resident staff. The ward units have their own hospital and exchange telephones in a small cubicle at one end of the main wards, and there is a wireless plug for every patient. Bed and food trolley lifts have been placed centrally, and separate service lifts have been provided in the sanitary units for soiled linen, &c. The floors of all wards are made of teak blocks, terrazzo has been used for the sanitary rooms and kitchens, and rubber for all corridors and staircases in order to obviate noise as far as possible. The walls are painted in a high gloss cream enamel and the ceilings in distemper. All doors are flush both sides and cupboards throughout have been built in.

Although restricted by the space available, the arrangements and equipment of the new building conform to the standards of the most enlightened hospital practice.

PUBLIC HEALTH

Milk in the Summer Holidays

After studying the methods used by various local education authorities in the distribution of holiday milk to school children, the special services subcommittee of the education committee of the L.C.C. have recommended a scheme for the distribution of milk to certain of the children under their care during the coming summer holidays. At many schools cleaning, painting, and so on are carried out during the holidays, and at others, where no work is being done, opening the schools would entail the employment of relief schoolkeepers; this has suggested the advisability of distributing the milk in the public parks instead of in school buildings. The scheme proposes that the women attendants at the gymnasia in the parks, who are familiar with the local children, should supervise the issue of the milk and undertake the necessary arrangements with the suppliers, relief attendants being provided where necessary. It has been thought advisable to limit the scheme in the first instance to those children who receive milk on the advice of the school doctors, as the inclusion of "voluntary" cases, though obviously desirable, would tend to complicate the experiment, and the arrangements suggested would probably not be found adequate for the distribution of milk to them. The cost of the experiment is doubtful, as the attendance of the children will depend upon such unpredictable factors as the weather and the numbers away on holiday, but suppliers will be asked to deliver the milk on a sale or return arrangement and, beyond the actual cost of the milk used, the only expense will be that of attendance.

PARLIAMENTARY INTELLIGENCE

ERADICATION OF ANIMAL DISEASES

On June 29th the House of Commons went into Committee and Mr W S Morrison, Minister of Agriculture moved the financial resolution in connexion with the Bill which will embody the Government's new agricultural proposals. The object of these was to increase the fertility of the soil, which would first put the land into such a condition that in an emergency it would be able to provide food for our own people and secondly it would do this in a manner advantageous to the normal development and practice of agriculture in time of peace The proposals included the inauguration of an attack on disease in flocks and herds of animals and in poultry on a scale greater than had ever before been attempted in this county The machinery of the Diseases of Animals Acts would be used, controlling both the ports and also the movement of animals in and from certain areas designated as infected. In this way the system had been successful in certain highly infectious disease but he regretted to say that the position with regard to other more insidious infectious diseases—notably tuberculosis, had tended to deteriorate this was due partly to the increased mobility of modern life The Gowland Hopkins Committee in 1934 had estimated that 58 per cent of the dairy cattle leaving herds were disposed of on account of disease that the average productive life of dairy cattle was under four and a half years or half what it should be that 40 per cent of the cows were infected with tuberculosis in various degrees and that about the same proportion were affected with contagious abortion. The total burden of the diseases among all kinds of livestock had been estimated at about £14 000 000 a year

It was thus clear that the eradication of disease even if they were only half successful would be a most valuable service to agriculture It was now proposed to tackle the immense problem of tuberculosis in cattle as what it was a problem of the diseases of animals, by the appropriate machinery with a single island service of veterinary officers for the purpose Farmers themselves could not possibly solve it for it was the result of many generations of neglect The present system under the local authorities, was at fault largely owing to their varying resources and standards. Good work that had been done in one county might be hampered by lower standards in an adjoining county The bacillus ignored county boundaries and the division of areas by counties was not the same thing as the designation of areas according to the amount of disease in them. What the Government proposed was something bigger in scope than local authorities had ever tried to do before In other words, the attack on tuberculosis had hitherto been carried out in detachments, with a local force sometimes getting out of touch with its neighbour and liable therefore to frustration. What was required was not so much a change in tactics as a more comprehensive strategy The powers of local authorities were thus at present inadequate To deal with milk they had to deal with cows and that was a problem of the diseases of animals because healthy cattle were the logical foundation of pure clean milk. The proposals in the White Paper would set on foot the more comprehensive strategy by creating a centralised veterinary service for the whole island to combat the diseases of animals and of poultry in all their manifestations The veterinary profession realised that the series of Diseases of Animals Acts provided the one way in which there was hope of real progress. Part-time practising veterinary surgeons would not in any way have their living interfered with indeed by making the agricultural community more conscious of the importance of disease among livestock there was a greater prospect of these practitioners finding their services used He hoped to see from this a rise in the whole status of the veterinary profession

CRITICISM OF THE MINISTRY

Mr T Williams said that the Labour Party were wholeheartedly with the Minister about the eradication of diseases but it was a step which ought to have been taken some 30 years ago The Gowland Hopkins Report revealed an appalling state of affairs. For example there were approximately 50 counties which had not one full time veterinary surgeon As most of the counties were dominated by farmers they were wholly responsible for this If the first step that the Minister was taking would lead to the cleaning up of the herds of this country the saving to agriculture and to the health of the people, including the consumers of milk would be enormous The Labour Party wanted to see as soon as possible a national veterinary service with full power to act, so that no county which ignored its responsibilities would affect adjoining counties Unless spending power was provided however he did not see what was to happen when the land of this country was at length producing up to its absolute capacity The Minister had given only one indication he was prepared to subsidise cattle foods but he was not prepared to subsidise the consumption of human food

Mr W Roberts said they all welcomed the proposals for disease control He hoped that the new attested herd regulations would be more effective than the old ones and he wondered whether under the new proposal, it would be possible to do something to encourage those breeding farmers who did not in fact sell milk. Under the attested herd scheme the main encouragement was the 1*d* per gallon which the farmer might get on his milk, but there were many farmers in the high lying districts who concentrated on breeding stock, and some incentive should be given to them to clear their herds of tuberculosis

Sir Malcolm Barclay Harvey said that it had been hotly contested in Scotland as to whether it should be under central control in London or whether there should not be some control in Edinburgh He was much impressed by the arguments in favour of central control and he thought that the Minister had done the right thing but he pleaded that there should be a strong liaison in Edinburgh

Mr Price said he was glad that the Government proposed to deal with bovine tuberculosis on the basis of areas. He had been very much struck by the progress that the United States of America had made for by that method they had in several cases completely cleared a whole state of any sign of bovine tuberculosis. He was glad that the veterinary services were to be brought under a more central control but at the same time there was an invaluable private veterinary service in this country which was of tremendous assistance to farmers and which he hoped would not be jeopardised in any way by anything that was done under this scheme

Sir R Dorman-Smith said he believed that the Minister was going to make it easier for milk producers to qualify to come into the scheme for attested herds If that be true it would probably mean that the Milk Marketing Board would have to face a formidable liability in the payment of premiums and bonuses to those who qualified. This was rather unfair for it was certainly a thing the Government would never allow themselves to take on. The proposals in regard to diseases of animals would be a grand crusade to which they could all give the most hearty support. He assured the Minister that he could rely on the coöperation of the farming industry

Mr Hopkin said he knew that it was not possible now to provide attested milk for the school scheme because there was not enough but surely it ought to be the first claim on the Minister as soon as possible to see that milk of the best quality and the highest purity was obtained by the school children before anyone else He was glad to see that this scheme was joined up with a planned attack on contagious abortion. The only criticism there that he had to make was that the amount of money to be spent was far too little, because £50,000 spread over four years was, in his opinion, hardly enough.

Sir F. ACLAND said he was acquainted with members of the medical profession who could, with the present standard of knowledge, prepare a dead vaccine that could be inoculated to calves at birth and would protect them from any risk of tuberculosis. If that system could be worked out and made generally applicable they could get rid of tuberculosis within one generation of cattle. They would see how that went. A friend of his in the medical profession was to have the chance of trying out his discoveries in the case of foot-and-mouth disease, and no doubt, if he could establish his theories, he would begin to apply them to tuberculosis as well.

Mr. HENDERSON STEWART moved an amendment which he said was designed to retain for Scotland the general autonomy in administration which under the Scottish Office they now enjoyed and to preserve the present high standard of veterinary services in Scotland. The scheme outlined in the resolution, he said, struck at the whole basis of separate administration in Scotland. It would be impossible to bring the standard of the veterinary services in England up to that of Scotland within a reasonable measure of years, for the reason that there were not the veterinary surgeons available to provide the whole country with the same intensive inspection that was enjoyed north of the Border. The only effect of that would be to draw away some of the services of the veterinary staff that Scotland now possessed, and therefore to lower their present standards. That would not be for the good of the country.

THE UNDER SECRETARY'S REPLY

Mr. WEDDERBURN agreed that for twelve years they had had a very efficient service in Scotland for the eradication of tuberculosis, which had resulted in there being more attested herds and a smaller proportion of tubercular affected cows in non-attested herds in Scotland than in England. But there was not, he thought, the slightest reason why the efficiency of that service should be in any way affected by this centralisation. On the contrary, he thought that backward areas were more likely to be brought up to the standard of the more progressive authorities in Scotland than they would otherwise be. The Minister was very much alive to the administrative advantages of securing the closest possible connexion between the Scottish veterinary service and Scottish opinion, and in order to secure this, he was prepared to consider the appointment of a separate permanent officer in Edinburgh to keep in touch with the Scottish officers. If Mr. Stewart's amendment were carried it would involve a separate service for all animal diseases in Edinburgh. There were serious objections to that course. It would take a long time to train the necessary staff, and they would not have enough veterinary surgeons of their own in Scotland to deal with a serious outbreak of foot-and-mouth disease.—Mr. STEWART said that in view of the assurances Mr. Wedderburn had given he would ask leave to withdraw his amendment. The Labour Party, however, refused leave for withdrawal and the amendment was negatived by 210 to 111.

The resolution was then agreed to.

PHYSICAL TRAINING AND NATIONAL HEALTH

In the House of Lords on June 28th, Earl STANHOPE, president of the Board of Education, moved the second reading of the Physical Training and Recreation Bill. He said that the demand for increased opportunities for physical training and fitness, particularly among the younger generation, was one of the most striking features of the present day. It was a result of national education, and whereas in the old days only some two hours a week were given for exercises and gymnastics, at present it was not uncommon for a period to be provided every day. This was more true in the elementary schools than in the secondary schools, and only in those that had been reorganised. Owing to a wider and more varied syllabus of physical training, to include an adequate daily period of exercise, organised games, swimming instruction, and gymnastics, children had left school with a desire for physical exercise, that had spread among the younger generation and had now infected a great many of their elders. When the House debated the question of national physique last November Lord Dawson of Penn had remarked that they should distinguish between physical education and physical recreation. Lord Stanhope said he wanted both. The physical education in schools should be compulsory, but given in such a way that it would become a hobby and a physical recreation in later years. What youth had gained in school, however, they often lost once they left, because there were no facilities for them to carry out physical exercises. It was to meet that need that the Government had produced this Bill.

It was essential that the scheme should be entirely voluntary because an Englishman was fairly easy to lead, but impossible to drive. It was based on existing organisations, and its object was to mobilise voluntary effort and to join it with the extremely valuable work already being done by local authorities. It had been said in various quarters that because this scheme coincided with the Government rearmament scheme they were therefore linked together, and that this was a method of obtaining recruits for the services. This was untrue and the scheme was in no sense military.

In this country it was very difficult to provide enough open spaces for games and for those who worked in cities to find time to get away except at the week-ends. A good deal of their physical training had therefore to be done in gymnasia, particularly during the winter months. A national system that confined itself solely to gymnastic training and physical jerks would be extremely dull, and they would never make a real success of it. By joining it up with outdoor sports and outdoor games, which by themselves did not make a man absolutely as fit as possible, they could make it an attractive hobby and recreation for people. The knowledge of the value of physical training and physical culture was growing very rapidly throughout the country, but even now that knowledge was nothing like so widespread as it should be. There was still a very large number, including those who were responsible for the better known public schools, who had not yet realised the value of physical training. Under the Bill the Board of Education was empowered to provide one or more national colleges, and to maintain and aid them as it thought fit. The object of the college was to train and equip an adequate supply of teachers, to carry on research work, to arrange demonstrations, and also, if necessary, to help in training instructors for school work.

Lord STRABOLGI, welcoming the Bill, said there ought to be a separate Ministry for the whole range of sport and physical culture. As long as a large section of the people were suffering from malnutrition, however, all their energies would be wasted. Wholesome and sufficient food was more important for a large section of poor people to-day than physical jerks. The Labour Party recognised the importance of physical fitness in national defence; part of that national defence must be a strong, virile population. If they wanted an army they might as well see that the recruits were strong and healthy, and he suggested that it might be worth while subsidising holiday camps.

Viscount BLEDISLOE said that he had been shocked at the relative neglect of national physique in this country, and he welcomed the Bill as president of the National Council of Social Service because it definitely combined Government action with voluntary organisation.

Lord Aberdare said he agreed with the whole structure of the Bill and believed that its results would be bigger than anyone anticipated who was instrumental in its original introduction to their democratic life It had been stated that some people might find difficulty in taking exercise owing to working hours but even those who engaged in heavy manual work were made more brisk and refreshed by physical exercise and there was no doubt that a boy or man who took regular exercise of a scientific type could do manual work with less weariness it was the difference between being in training and out of training Surprise was expressed that the B.B C did not provide early morning broadcasts. Certain technical difficulties were standing in the way but he hoped that they would be making an announcement shortly The National College was a vital necessity not only for training purposes but for carrying out the very necessary medical research perhaps it was the mainspring of the whole movement

THE QUESTION OF NUTRITION

Viscount Dawson of Penn said he agreed with Lord Aberdare that this Bill was of vast importance, because it gave method and structure to a policy which would aim at the promotion of the fitness of the nation It was necessary not only in the interest of the present but of future generations that they should be given the best opportunity to turn those great potentialities that were particularly notable in the British race into actualities They had only to go back to the time of the War to visualise what powers were in our blood At Aldershot, at the beginning of the War there were sent down a number of lads who one would have thought at the time could never be converted into anything approaching a soldier At the end of six weeks they already showed an alteration, and in six months they were unrecognisable He believed that if the youth of the nation had the opportunity of a training in fitness they would create a surprise by the rapid way in which they would respond

They had to remember that in securing a fit race in days gone by nature did a large part of the work. She killed off the unfit, and only the fit survived. But they were gradually undoing nature s efforts by their developed sense of greater humanity and a more acute conscience towards those in distress. But if they were to continue that policy of looking after the weaker brethren—and he could not conceive anybody doubting that it was a right policy—they must remember that they were at the same time undoing nature s plan for discarding the weaklings of the race It therefore became doubly important to set up a policy which would create fitness. If they created fitness and gave the proper opportunities it was inevitable that the more fit and efficient would come to the fore Consequently the more fit and efficient would lead the nation and the fit boys would ultimately marry the fit girls and the eugenic standard of the race would be raised. It must be borne in mind that the young were all hero worshippers and they would follow the leaders of their own generation. If therefore they gave opportunity to those who were most fit to move forward as they inevitably would in the company of their generation they would set the pace of conduct and the standard of fitness for those who would come after them.

Lord Dawson said he agreed with Lord Aberdare that the National College from one point of view was the pivot of this scheme. If there was a suitable college—and he hoped it would be within reach of London—and if that college was erected in suitable and large enough grounds, they would be able to have a community of students where they would learn the technique of their business where men and women who were going to take up physical education as a whole-time job would be trained and in addition to those where organisers and leaders for the voluntary organisations could receive a training of lesser duration and less strenuousness. And he hoped there would be one more class regarded that they would be able to choose the best of the boys who were passing into adolescence and give them at this college a special six months training Thus they might test out those who they thought were potentially fit, and be able to give those who turned out to be fit the opportunity of becoming the leaders of their generation in the walks of life which they individually pursued.

The distribution in this country of what was called malnutrition—of what was he thought very often more accurately called undernutrition—was patchy and it was not wholly due to poverty Lack of education in the choice and the cooking of food was largely to blame He believed that people were ready to receive this instruction, because they were beginning to understand that these were no small matters in securing the proper nourishment of the younger people He had nothing but praise for this Bill for it gave an opportunity for opening up a new era. By the means that it provided there was a prospect of giving this race the opportunities which it needed to bring itself to the forefront in physical fitness and happiness

LORD STANHOPE S REPLY

Earl Stanhope said he found himself in entire agreement with everything Lord Dawson had said Many people were inclined to quote the very high physical development in Germany and yet the younger Germans were those born either during or just after the War when the question of nutrition in Germany was of course one of great difficulty and when practically no children whatever their class or whatever their wealth, had much chance of getting adequate food. Similarly in regard to Czechoslovakia. Those who knew something of the conditions in Czechoslovakia would say that anything of that kind was quite out of the question here even among the unemployed the standard of life of the people here was so much higher than there In Czechoslovakia also the improvement in physique of all classes, and particularly the working class had been very remarkable It had been due not to better nutrition so much as to physical training and physical development given by the sort of voluntary methods proposed under the present Bill

The Bill was read a second time

NOTES ON CURRENT TOPICS

What is Professional Income?

In the House of Commons on June 30th when a new clause in the Finance Bill providing for the charge of the National Defence Contribution was under discussion Mr Pethick Lawrence said that they had been told that professional men would be exempt from the operation of this tax. The Chancellor of the Exchequer had spoken of doctors and other professional men and it was understood that a doctor who earned fairly large professional fees exceeding £2000 a year was to be exempt But when he (Mr Pethick Lawrence) read subsection 3 of the clause he was a little mystified. The subsection said:

> The carrying on of a profession by an individual or by individuals in partnership shall not be deemed to be the carrying on of a trade or business to which this section applies if the profits of the profession are dependent wholly or mainly on his or their personal qualifications.

There were two sources of ambiguity in that sentence One was in the words wholly or mainly and the other in the words personal qualifications

Colonel Colville Financial Secretary to the Treasury said that in practice it was believed that there would not be much difficulty in determining whether the tax should properly be charged or not. The experience in income tax was that it was not impossible to determine what was a profession and what was not a profession and cases had been decided in the Courts They wished to except from the tax those cases where a business literally could not be carried on in the absence of the leader on whose personal qualifications the whole thing depended—the professional man who was, in fact, the centre and mainspring of the work of the firm

Sir J SIMON said he thought that the courts had said that the idea of a profession was that a man had been prepared to do his work by a course of systematic study A doctor was called a professional man because he had gone through a medical course There was good sense in that, because it meant that the capital that he was employing was in a special sense the capital inside his head. He had accumulated a lot of special knowledge as a doctor and that was the contrast between the idea of a profession and the idea of a commercial pursuit On the whole this method had been found to work perfectly well before and he thought they could rely on it in the future

Government and Supply of Cheap Milk

The House of Commons on July 5th agreed to the financial resolution on which the Bill amending the Milk Acts, 1934 and 1936, will be based.

Mr RAMSBOTHAM, in moving the resolution said that it regularised the payments of the English Milk Marketing Board to producer retailers who had taken part in experimental schemes for the supply of cheap milk for nursing and expectant mothers, and children under school age in certain parts of the special areas Doubt had arisen whether it was within the legal power of the Board to make these necessary rebates to the producer-retailers, and the resolution would put that beyond all doubt

Mr JOHNSTON said that the Government were subsidising milk in schools and school children were being supplied with milk at 1*s* a gallon. Everybody applauded that, and every medical officer of health, educationist, and nutritionist said that the Government were on the right lines In the case of children of four, three, and two years old, the babies, the sick and the nursing mothers, the price was 2*s* a gallon Why should the Government continue to make this difference in the charges? Instead of allowing milk to be diverted to the factories, the Government should say to every medical officer of health that as long as a mother with young children cared to go or to send to any authorised distributor of milk she could get it at the same price as that at which it was supplied to the schools

Mrs TATE said she had constant complaints from mothers of children at schools that one of the reasons why they did not care for the milk was that it was pasteurised It was time that there was a real, impartial inquiry into the relative nutritive value of pasteurised and unpasteurised milk. The milk-in-schools scheme had been in operation for three or four years, and there should be leaving school a generation of children who had acquired a taste for pasteurised milk If inquiry were made, however, she thought it would be found that very few children who had left school had continued the milk habit

Mr W S MORRISON, Minister of Agriculture, replying to the debate, said questions had been raised about the pasteurisation of milk, and other matters which were of great interest to him in attempting to formulate a Government milk policy All he asked the Committee to do that night was to agree to extend the existing provisions for another 12 months, so that he might get some other opportunity of laying before Parliament legislative proposals of a more permanent character

Hairdressers' Registration Bill

In the House of Lords on July 2nd Lord STRABOLGI presented the Hairdressers' Registration Bill, which was read the first time The Bill provides for the registration of hairdressers and regulates the practice of hairdressing It establishes a Board to be called the British Hairdressing Board, whose duty it shall be within a year after the passage of the Act to set up and maintain a register of hairdressers The Board is empowered to make regulations for prescribing the standard of hygiene and sanitation to be observed in hairdressing establishments, and in schools, colleges, and centres of training approved by the Board It is provided in Clause 21 that nothing in the Bill shall prevent the exercise of any right or function by a registered medical practitioner, or a registered chemist which he is entitled to exercise under any other Act, and that any registered chemist shall be entitled, without registration under the Bill, to perform any of the treatments included in the definition of "hairdressing" This definition is as follows "The expression hairdressing means the performance of any or all of the undermentioned operations to any person for the cleanliness, comfort, or better appearance thereof—namely, shaving, brushing, combing, cutting, singeing, shampooing, tinting, dyeing, bleaching, waving, curling, setting, dressing, perfuming, or depilation of the hair upon the scalp or face, the hand or vibro massage of the scalp, face, hands, or arms, manicure, and the application of cosmetics, antiseptics, hair lotions, or tonics, powders, creams, or similar preparations"

Medical Benefit for the Adolescent

The National Health Insurance (Juvenile Contributors and Young Persons) Bill, which was introduced in the House of Commons on June 22nd, provides that any boy or girl, who, after reaching school leaving age but before the age of sixteen, becomes employed within the meaning of the National Health Insurance Act shall immediately become entitled as a "juvenile contributor" to medical benefit as though he were an insured person, and that whether or not he remains continuously employed he shall continue to be so entitled until the end of the half-year in which he attains the age of sixteen and a half or until he becomes entitled to medical benefit as a fully insured person by reason of employment after the age of sixteen, whichever first occurs The contributions to be paid are fourpence a week, divided equally between the juvenile contributor and the employer The cost of medical benefit and of administration will be defrayed in the same manner as benefit under the principal Act, that is, as to six-sevenths (boys) and four-fifths (girls) out of the contributions, and as to the balance out of moneys provided by Parliament The charge for medical benefit, including the supply of medicines and administration by insurance committees, will be on the same basis as for ordinary insured persons—namely, a sum not exceeding thirteen shillings per head per annum

The period of juvenile membership of an approved society shall be counted towards the qualifying period for additional benefits of the nature of treatment, such as dental and ophthalmic benefits, when the juvenile contributor becomes an ordinary insured person The contributions of those juvenile contributors who do not join a society within a time to be prescribed will be paid into a fund to be known as the Juvenile Deposit Contributors' Fund, and the cost of their medical benefit and its administration will be paid out of that fund, the solvency of which is guaranteed by the Reserve Suspense Fund of the main scheme

Clause 5 of the Bill provides that it shall be the duty of education authorities to make arrangements for their officers to furnish on the application of a medical practitioner, or of an insurance committee on his behalf, for his confidential information, such particulars as to the school medical record of any young person (under the age of 18) and such other information in their possession relating to his medical history as the practitioner may deem necessary for the purposes of his functions in relation to the provision of medical benefit for that person

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On June 29th the Cinematograph Films (Animals) Bill was read the third time in the House of Commons and sent on to the House of Lords

In the House of Lords on July 6th the Cinematograph Films (Animals) Bill was read a second time The Royal Assent was given by Commission to the Hydrogen Cyanide (Fumigation) Act

On June 30th in the House of Lords the Widows Orphans and Old Age Contributory Pensions (Voluntary Contributors) Bill was read the third time and passed

On July 1st the Royal Assent was given to a number of Acts including the Children and Young Persons (Scotland) Act; the Widows Orphans and Old Age Contributory Pensions (Voluntary Contributors) Act and the Public Health (Drainage of Trade Premises) Act

On July 2nd the Local Government Superannuation Bill was read the third time in the House of Commons

In the House of Commons on July 5th the Agricultural Bill was read a second time The Hydrogen Cyanide (Fumigation) Bill was read the third time.

QUESTION TIME

WEDNESDAY JUNE 30TH

Day Nurseries in Liverpool

Mr **Kirby** asked the Minister of Health whether the Liverpool port sanitary and hospitals committee had notified him of their intention to close two municipal day nurseries whether he was aware that such action would be widely deplored and might lead to the mothers of the children having to relinquish necessary wage-earning employment in order to care for their children at home and to avoid causing these mothers to seek public assistance would he take steps to fully investigate any contemplated reduction in day nursery accommodation in Liverpool —Mr **Bernays** Parliamentary Secretary to the Ministry of Health, replied My right hon. friend has not received any such notification from the City Council He will communicate with them and inform the hon Member of the result

THURSDAY JULY 1ST

Inspection of Electrical Apparatus in Factories

Mr **Kelly** asked the Home Secretary whether he was aware that at a recent inquest on a man who was killed whilst testing a switchboard it was revealed that there were only five electrical factory inspectors for the whole country and whether it was proposed to augment this number —Sir **Samuel Hoare** replied No Sir There are nine electrical inspectors working under H M Senior Electrical Inspector of Factories and the inspection of electrical apparatus in factories also forms part of the duties of the general staff of Factory Inspectors The strength of the inspectorate will be reviewed in the light of the provisions of the Factories Bill as finally settled The hon Member will recollect that I specifically stated that we contemplate a substantial increase in the whole inspectorate

Imported Cheese and Undulant Fever

Mr **Liddall** asked the Minister of Health whether his department obtained official certification that the herds of goats from the milk of which imported gorgonzola cheese was made were free from disease and whether imported cheeses from foreign sources were continuously tested at our ports of entry to prevent the sale here of cheese containing germs of undulant fever or Mediterranean fever or other diseases endemic among South European herds of goats —Sir **Kingsley Wood** replied No Sir The matter has not however escaped attention and I am advised that on the evidence available no special precautions appear to be necessary —Mr **Leonard**: Does the germ survive the cheese —Sir **Kingsley Wood**: It may be of some comfort to the hon gentleman to know that any germs there may be are destroyed during the maturing of the cheese

Health Conditions in Offices

Mr **Creech Jones** asked the Minister of Health what instructions he had issued to local authorities in the matter of health conditions of office workers and whether he had recommended any minimum standards of working conditions and any system of systematic inspection of offices —Sir **Kingsley Wood** replied I am sending the hon Member a copy of a circular which I have issued urging local authorities systematically to exercise their powers under the Public Health Act 1936 In view of the procedure laid down by the Act it would not be appropriate for me to make such a recommendation as is suggested in the second part of the question.—Mr **Creech Jones** Will the Minister call for periodical reports from local authorities in view of the great anxiety shown in the debates in the House when the Offices Regulation Bill was being discussed?—Sir **Kingsley Wood**: I will consider that

FRIDAY JULY 2ND

Physical Standard in British Army

Sir A **Wilson** asked the Secretary of State for War what are the physical qualifications required of recruits for line regiments at present as compared with those required in 1934 and in 1914 respectively; and whether the physical standard required is still as stated in the report on the British Army for 1934 equivalent to if not higher than for a first-class insurance policy —Mr **Hore Belisha** replied The physical standard as regards minimum height and chest measurement for the year in question are as follow:—

	1914	1934	1937
Chest (fully expanded)	33½ in	33 in	33 in.
Range of expansion	2 in.	2 in.	2 in
Weight	112 lb	112 lb	112 lb

The medical standard is still equivalent to if not higher than that for a first-class insurance policy

MONDAY JULY 5TH

Air Ambulances for Spain

Miss **Rathbone** asked the President of the Board of Trade whether he was aware that General Aircraft Limited of Croydon, had been informed that export licences for the supply of Monospar air-ambulances to the Basque Government could not be allowed and whether in view of the terms of Article 18 of the Geneva Convention of 1929 he would now reconsider this decision —Mr R S **Hudson** Parliamentary Secretary Overseas Trade Department replied I presume that the hon Member refers to the replies given to certain inquiries which were not supported by evidence that the aircraft in question were in fact destined for Red Cross use Any application for an export licence for ambulance aircraft for Spain supported by an approved Red Cross organisation will certainly be sympathetically considered

Miss **Rathbone** asked if it was not the case that the Red Cross organisation was not working in Spain and if it would not suffice if the application came from some organisation that was working in Spain?—Mr **Hudson** said he had nothing to add to the answer If it was an approved Red Cross organisation the matter would be sympathetically considered —Miss **Rathbone**: May I press the point that the Red Cross organisation has declined to work in Spain? Is it fair to deprive the Basque Government of ambulances when the Red Cross organisation has refused to work in Spain? Neither the International Red Cross nor the British Red Cross has a single ambulance in Spain —Mr **Wedgwood Benn** asked if the Minister would say what he meant by approved Red Cross organisations for this purpose?—Mr **Hudson** said that so far as he was aware none of the applications that had been received had been from organisations that would be classed as approved Red Cross organisations —Mr **Wedgwood Benn** asked if that meant that if the organisation which made the application was not approved by the Minister as a Red Cross organisation for this purpose he would then decline to supply ambulances to Spain?—No further reply was given

Nursing homes By laws

Mr **Rostron Duckworth** asked the Minister of Health the number of local authorities which had introduced by laws, and the number which had omitted to do so, under the Nursing Home Registration Act, 1927, and whether complaints were still being received with regard to the existence of bogus nursing homes —Sir **KINGSLEY WOOD** replied By laws under the Nursing Homes Registration Act, 1927, have been made by 88 local supervising authorities in England and Wales and by 42 district councils to whom the necessary powers have been delegated I regret that the information available is not sufficient to enable me to state the number of authorities who have not made by laws As regards the last part of the question, the few complaints received in my department are normally referred to the local authorities who are responsible for the registration and inspection of nursing homes and to whom such complaints should properly be addressed

TUESDAY, JULY 6TH

Veterinary Services in Scotland

Mr **MALCOLM MACMILLAN** asked the Secretary of State for Scotland whether he would take into consideration the need for veterinary surgeons and technical advice in breeding and improving livestock in the Western Isles, whether he would take special measures in this connexion, and what those steps were likely to be —Mr **ELLIOT** replied Technical advice in the breeding and improvement of livestock is provided, without charge, by the staffs of the agricultural colleges in Scotland and their free services will continue to be available for the purpose As regards the treatment of sick animals, no proposals designed to increase the number of veterinary surgeons in private practice in the Western Islands are at present *in contemplation*

Free Meals to Necessitous Children in Glasgow

Mr **DAVIDSON** asked the Secretary of State for Scotland the number of school children in the Kelvingrove division of Glasgow receiving free meals as necessitous cases —Captain **HOPE** replied My right hon friend is informed by the Education Authority that the number is 347

Supply of Milk to School-children in Carmarthen

Mr **JAMES GRIFFITHS** asked the Parliamentary Secretary to the Board of Education, at how many schools in the county of Carmarthen provision was made for the supply of milk to children during school hours and how many schools made no such provision —Mr **KENNETH LINDSAY** replied According to returns from the schools showing the position on 31st March, 1937, provision for the supply of liquid milk to school children was made on that date in 172 public elementary school departments in the administrative county of Carmarthen Of the remainder, one department provided dried milk only and 19 departments made no such provision Liquid milk was provided in all the departments in the borough of Llanelly, and in 10 out of 12 departments in the borough of Carmarthen, where the remaining 2 departments provided dried milk

Stone-dusting in Mines

Mr **EDWARD DUNN** asked the Secretary for Mines whether he proposed to amend the regulations relating to stone dusting in mines consequent upon the disturbing comments made on the present stone-dusting regulations in recent mining disasters, and, if so, when they might be expected —Captain **CROOKSHANK** replied Yes, Sir Draft general regulations in which are included important amendments relating to precautions against coal dust have been communicated to the principal representative bodies of the industry for their observations This action is being, of course, taken as a matter of urgency without prejudice to any recommendations that the Royal Commission may make on this subject

Health Conditions in Mercantile Marine

Mr **CREECH JONES** asked the President of the Board of Trade what arrangements existed in his department for the study and prevention of unhealthy conditions of the mercantile marine, whether any medical officers in his department were charged with this special responsibility and to what extent consultation with the Ministry of Health on these matters was a practice of the mercantile marine section of his office —Mr **OLIVER STANLEY** replied There are three medical officers attached to the survey staff and close contact is maintained with the Ministry of Health, and the port sanitary authorities Questions relating to the general health of the mercantile marine are dealt with by an inter departmental committee of Board of Trade and Ministry of Health representatives The plans of ships built in this country are examined and any necessary steps taken to ensure that the crew's accommodation conforms to the present standards of hygiene and comfort Provisions as to the maintenance of the accommodation are included in the Instructions to Surveyors on this subject which have recently been revised and will shortly be issued In addition Board of Trade Surveyors take every opportunity to inspect the crew's accommodation on ships in service

Medical Treatment of *Deutschland* Casualties

Mr **MAGNAY** asked the Secretary of State for War whether any charge would be raised against the German Government in connexion with the reception and medical treatment of casualties from the German battleship *Deutschland* in the military hospital, Gibraltar —Mr **HORE BELISHA** replied No charge will be raised against the German Government in respect of a humane service which would always be readily rendered in such circumstances The cost will be borne on Army funds —Lieut Commander **FLETCHER** asked whether, in similar circumstances, we should not be very surprised to receive such a mean and petty minded request for payment —No further answer was given

THE REAL FLORENCE NIGHTINGALE

FEW people now living knew Florence Nightingale as other than an unapproachable figure living in strict retirement Some still suppose that she was only a nice gentle nurse Mrs Rosalind Nash, broadcasting in the "I Knew a Man" series on Sunday last, said that others, following Mr Lytton Strachey, take her to have been a bitter and ambitious tyrant, liable to fits of what he called demoniac frenzy To arrive at the truth Mrs Nash held it to be necessary *only* to consider the *facts*, best recorded in Sir Edward Cook's biography As one read, it quickly became evident that no mere amiable nurse could have done what she did But was she a demoniacal scold ? It seems unlikely, for an ungovernable temper is almost the greatest of all disqualifications for coöperation in responsible work. Miss Nightingale spent her life in public work, but never held any office except during the two years of the Crimean War She enlisted in her work, not only the best professional experts of her time, but civil servants and other officials, who were glad to be at her disposal, and to have her help on their subjects There have been reigning queens and other women rulers, said Mrs Nash, and there has been many a woman who has influenced public affairs through her relation with a man in power But, except Florence Nightingale, there has never been a woman who could do, who could be made welcome to do, as a private person something very like the work of a *permanent* head of a Health Ministry She was in effect a great voluntary civil servant, and it is as this that she should be remembered

NEW HOSPITAL AT ST HELIER —The Surrey county council is asking the Ministry of Health to sanction a loan of nearly £1,000,000 to build a new hospital at St Helier The council has approved the scheme at a cost, including furniture, of £990,873, the plans having been under consideration for a couple of years Last month it was reported that the tenders have been increased by about £300,000 owing to the rise in price of materials

MEDICAL NEWS

Royal College of Surgeons of England

Election to the Council —On July 1st three Fellows were elected into the council to fill the vacancies caused by the retirement of Sir Holburt Waring Mr C H Fagge and Mr W Sampson Handley The result of the poll was as follows —

	Votes
WILLIAM SAMPSON HANDLEY (Middlesex)	665
CHARLES HERBERT FAGGE (Guy s)	605
CECIL PEMBREY GREY WAKELEY (King s Coll Hosp)	480
James Ernest Helme Roberts (St Bart s)	307
Vincent Zachary Cope (St Mary s)	359
Lancelot Edward Barrington Ward Kt (Gt Ormond-street)	287
William Hugh Cowie Romanis (St Thomas s)	248
Walter Goldie Howarth St Thomas s)	217

In all 1227 Fellows voted; in addition 13 votes were found to be invalid Mr Fagge Mr Handley and Mr Wakeley are all elected for the full period of eight years

University of Cambridge

Dr A M. Barry has been appointed an Elmore research student from Oct 1st

University of Birmingham

At a congregation held on July 3rd the hon. degree of LL.D was conferred on Sir Gilbert Barling The following degrees and diplomas were also conferred —

M.D.—H P Newsholme

M.B , Ch.B—Nosrat Amin J. W Brown Gardiner Mitchell C. P Nicholas Frances B Robinson, J M Small and C. W Taylor (with second-class honours) Isidore Ackerman Emil I M Addenbrooke T E D Beavan, R. H F Brain V H Cooper Enid Cyriax C M Fenn E R S Grice J B W Hayward, A C Houghton, Joanna M Hughes Joan J Lockley Moses Meir W H Osborn, H G H Richards, E J Richardson, R L Sadler J H Sangster O E Smith F H Vollam and M A G Ward.

Diploma in Dental Surgery —Bernard Hirschfield, F M Kay N D Pailthorpe, Melissa Strowson and William Sylvanus-Jones

University of Wales

At recent examinations the following candidates were successful;—

T D

L. M Edwards and Dorothy M James

D P H

Part I —R M. Dykes W J M Evans D T Richards B. A Thomas and D A O Wilson

National University of Ireland

At recent examinations held at University College Cork the following candidates were successful —

FINAL EXAMINATION FOR M B B.CH. B.A O

J N Twohig and Jeremiah Burke (with first-class honours) J F J Hickey Michael Lontin R G G Barry and J J Martin (with second-class honours), John Galvin Harry Gremson J P Lane, Margaret M Loughnan J J McCarthy, D F Murphy T K Murphy P L O Neill and Thomas Sheahan

D P H

M J McCarthy and John O'Herlihy

Queen s University Belfast

At recent examinations the following candidates were successful;—

M D

George Chesney, R. S Crumlie, W B Davis (gold medal), D J C Dawson, J D Hardy W D Hughes, Moses Jaffers W M Loughridge (with commendation) Alan Lynn (with commendation), J K M Collum, T A C M Quiston, B M Maxwell and J B Wilson A C Glendinning John Harper J W. S Irwin, J W Millen and M G Nelson (with second class honours) C T B Adams, Jean E Allen Hugh Arthur A R Baker, Evelyn Bennett David Black, D J Blumberg I A J Blyth A M Boyd, Ruth C M Brown, William Calwell R H Carson, Wilhelmina M Craig Q J Doran, Frederick Dornan, W H Fee Julia M Ferris, R C. Fraser S J G Gilmour J E Glasgow, J A H Henderson, N O Hughes E F G James M I Kaplan Harold Kennedy T A. King Mary E Loan, John Lightbody, F D Lord, J A Macaulay Grace E M'Clafferty J M M Closkey James M Murray R A E Magee Annie W Megaw R J Mitchell F J Murray J A O'Connell J W B Paton Eileen E Perry M I Robinson T L Ross, Kathleen Shannon J R S Thompson J B Upton, D G C Whyte E. L Wilson G N Wilson K S Wilson and W R Wright

University of St Andrews

On June 30th the honorary degree of LL.D was conferred on Mr W O Kermack, D.Sc director of the chemistry section of the laboratory of the Royal College of Physicians Edinburgh and on Dr Angus MacGillivray assessor of the General Council on the University Court and formerly reader in ophthalmology at the University

University of Liverpool

At recent examinations the following candidates were successful —

M.D

R T Bowes J L Brown Hilda M Davis D O Hughes and K W Stroude

FINAL EXAMINATION FOR M.B CH B

G E. O Williams (first-class honours) and R R Hughes (second-class honours)

Part III —A M Abrahams J de Bastarrechea S Bender D Boyars W E G Bradford, A Brooke Bateman K W Cameron Sheila Carmichael L H Chandler H I Cohen K A Colenso K W Evans, J G Fox, Constance M Frazer T C. Gray A. S. Hall Elsie O Hughes H Hughes T S Jones J Kay A. T Leggate M Libman, G B Manning R. Marcu Doreen M Martin R. S Riley W A M Robinson J P G Rogerson P J Rooney J M Russell, Henrietta Sloan, A C Smerdon, Gwenda Vaughan J Wajnerowicz, Evelyn M Williams Margaret E. Williams and H Zalin

Part II —H G A Almond, H Alstead H Angelman C T Baynes Patricia M Bennett-Jones, A L Black E J Bowmer A. R Bracey D W Bracey H Braslavsky, B H Brindle H Buckley A E Burton B Carruthers J L Chisnall, W H R. Cook J W Crowther G H Daglish H Dakin R B Davies J Donnelly Mary W Gaskell, K. D Gibson J Griffith, E L Hamm W J Hay Anne F M Heaney D R Holden, R S Holgate E P Houghton G O Hughes D A Hunt Brenda M Jones Iola L T Jones M I Jones, P Jones Helen Kay, R J Keating, J C Kee J C Kitchen, E. Leather J M Marchant J Mills J Moroney A Nachmanovitz, S Newman, J H Newmark I J O Flynn E N Owen R. A. C Owen J L Patton B I Phillips Hilda C Podmore J G Pritchard, W Pritchard E B Riding D J Roberts G I Roberts R. H Roberts G M S Ryan, E L Salinger G Sanderson, Joyce M Scholefield V K Summers, H J D Temple G R Thorpe, G C. Tweedle, Lucy H E Walker R Watson J H D Wetherell, R H White-Jones A. R Whitman, A H Williams C J Williams Gwendoline William I P Williams Joan S Wood, E G Wright G Wynne-Griffith and M Wynroe.

Part I.—C D Alergant, G E Badman Frances E Brierton R F Browne E. H L Cook, Margaret Edge R M Evans H R Forrest D M I Freeman, Thelma R Gaunt C M Gregory G O Griffiths, J Harders F Hedley Bessie Howarth H Ingham C T Jenkins, W Kulke, A. L Latner P C Lawson Pearl Lyons D H McCormack, Sylvia Makin, Eileen E V Martin, R J Miller G W H Millington J D Muir P J O Flynn R J Parry, J L Patton, Geraldine M H Paul Eleanor M Pearson L G Poole, A. G Porterfield, T Price V A. Rogers, C. Rowlands H J Shuttleworth C R Sluming H J H Soulby, W O Spence Lucy M Sutcliffe Catherine S Thomas G O Thomas, Megan E Thomas Joan P Thomson G R. Thorpe, J N Threlfall, Olivia S Turner J A. Wethered J H D Wetherell A. G Williams, and K. M Willis

D.M.R E

Part B —M J Brady J Courtney T D J O Farrell and J A. Ross

D P.H

E Agius R T Bowes A. Dodd Bessie Dodd, J G Hallwood Joy C. Lowe P Somasundram and E. A *Stilon*

Part I —G R. Griffith and S M Laird

D T M.

J Yofe

D T H.

G B Ludlam S H R. Syed, and Luise Wislicki

Ophthalmic Medical Practitioners' Group

This group was constituted at a meeting held at 17 Russell-square London, W C 1 on July 3rd at which Dr H. C Smith (Barnes) presided and the objects of the group were defined as (1) to protect the status and interests of ophthalmic medical practitioners and ophthalmic surgeons who are interested by capacity and experience in ophthalmology especially in their relation to local and other authorities and prescribing and non prescribing opticians; (2) to promote the advancement and interest of registered medical practitioners in the study and practice of ophthalmology An executive council was elected consisting of Dr T B Howson (Hornsey) Dr J I Higham (Commondale Yorks) Dr W J Lindsey (London) Dr N Pines (London) Dr W H Summerskill (London) Dr A L Watts (Edgware) with Dr H C Smith (chairman) and Dr A Hutton Ashkenny (hon sec and treasurer) It was decided to hold meetings quarterly in March, June, September, and December, to form provincial groups acting through the central group, to overcome the Minister of Health's contention that there is an insufficient number of specially qualified ophthalmic practitioners by advising and helping more practitioners to become so qualified, and to obtain the assistance of the British Medical Association in advising and inducing patients to select experienced ophthalmic medical practitioners in preference to prescribing opticians or shop counters Any who are interested may communicate with the hon secretary of the group at 100, Greyhound lane, S W 16

Medical Travelling Fellowships

The Medical Research Council announce that they have awarded Rockefeller fellowships for the academic year 1937–38 to the following candidates, all of whom propose to work at centres in the United States —

Dermid Lockhart Cameron Bingham M B, F R C S Edin, clinical tutor surgical out patient department, Royal Infirmary, Edinburgh

Eric George Lapthorne Bywaters M B Lond, assistant clinical pathologist Middlesex Hospital

Philip Rainsford Evans, M B M R C P Lond registrar medical diseases of children King s College Hospital

John George Sclater, M B, M R C P Edin, tutor in clinical medicine Royal Infirmary, Edinburgh

Eric Frank Scowen M D M R C P Lond., assistant director, medical professorial unit St Bartholomew s Hospital

Charles Herbert Stuart Harris M D, M R C P Lond Sir Henry Royce research fellow in influenza London and

Graham William Hayward, M B M R C P Lond resident medical officer National Hospital for Diseases of the Heart, London

The Rockefeller Foundation have also awarded fellowships, on the recommendation of the Council, to the following candidates in the special field of psychiatry, neurology, and related subjects —

Edward William Anderson, M D, M R C P Lond, medical director, Cassel Hospital Penshurst,

Alexander Kennedy, M D, M R C P Lond assistant medical officer Maudsley Hospital London

Alan Sutcliffe Kerr, M B Liverp F R C S Eng, surgical registrar, Royal Infirmary Liverpool

Denis John Williams, M D Manch, M R C P Lond resident medical officer Hospital for Nervous Diseases, Maida Vale and

Alexander Francis Rawdon Smith, Ph D Camb, senior student, Royal Commissioners for the Exhibition of 1851, working in the Psychological Laboratory University of Cambridge

Dr Anderson proposes to work in Germany, the others at centres in the United States Dr Rawdon Smith will hold his fellowship for six months only

An All-India League of Health

Lord Horder presided at a luncheon given at Claridges Hotel on July 6th to meet Sir Firoz Khan Noon, the High Commissioner for India, and representatives of the councils of the People's League of Health to commend a project for establishing an All India League of Health on lines analogous to the organisation in Great Britain

Lord Horder said that the possibility of placing at the disposal of the people of India the knowledge gathered and coördinated by the People s League of Health was first mooted in 1925, when Major General J B Smith, then medical adviser to the Secretary of State for India, expressed the view that such a body would be of much value to the Indian Empire Although the League had the sympathy and encouragement of the Minister of Health and of other Government departments, it was a voluntary body In a highly individualised society there was a mass of expert knowledge resident in trained and responsible men and women, which needed mobilising in the interest of the community To do this and to make this knowledge available for the people by the way of health education was the work of the League It would be opportune at the present time to explore the possibilities of establishing in India a sister body that might collaborate with the League in making her people health conscious, and thereby the better able to fulfil the duties of citizenship that were now being entrusted to them It was to ventilate this thought and to secure the valuable advice of those who knew India that the lunch had been arranged Brief speeches were then made on different aspects of the work of the League by Dr C O Hawthorne, its chairman of council Dr P Manson Bahr who spoke on the triumphs of tropical medicine Prof J C Drummond and Miss Harriette Chick, D Sc, who spoke on nutrition, Sir Frederick Hobday who explained the importance of the work done by the veterinary council of the League, and Prof James Young, who described an investigation now taking place under the League's auspices on the nutrition of expectant and nursing mothers The High Commissioner said that India had reached a stage where she was able to coöperate in matters of public health and medical research with scientists in this country for the benefit of her own people He mentioned various achievements which had already taken place, notably the elimination of cholera from the Punjab The great difficulty, however, was the poverty of the people The urgency and importance of health problems was very much in the minds of the legislators, they were doing their utmost to solve them as far as finances allowed, and they would be indeed grateful for the offer of expert help that was now being made He warmly thanked the People's League of Health for the interest it was taking Its lead in this direction would be received with enthusiasm and gratitude in India

Cambridge Medical Graduates Club

Presiding at a dinner of this club in the hall of King's College on July 2nd, Sir Walter Langdon Brown was able to announce a record attendance of 94 members and guests Like Samuel Gee riding through the snow to his wedding he had said to himself Is it really worth while ? And apparently he thought it was Returning to Cambridge there were always changes to be found To day the new anatomy school could be seen rising from its foundations, it should be open by October, 1938 Under the regius professor Dr J A Ryle, the medical unit had completed its first year Sir Joseph Barcroft had found a distinguished successor in Dr E D Adrian in the chair of physiology, and from October next the university would have a professor of pathology who was also vice chancellor—Dr H R Dean Among notable events of the past year had been the abolition of the M B thesis—an event that he feared would cause the ghost of Sir Clifford Allbutt to revolve in its tomb In speaking of his own never failing pleasure at seeing Cambridge again Sir Walter likened going to the University to falling in love "nobody can ever have had such a remarkable experience before "

Dr L E H Whitby reviewed the domestic affairs of the club, attributing the success of the dinner to his fellow secretary Mr W D Doherty The chairman's health was drunk, with song, but Sir Walter refused to emulate the clerical profession in addressing the same audience twice in the same day and the company, being pleasantly fortified, proceeded to take the air on the King s lawn

London Hospital Medical College

The annual prize giving was held at this college on Tuesday last Prof William Wright was prevented by illness from attending to give his usual review of the year s activities, and Lieut Colonel W Marlborough Pryor in expressing his regret that this should be so said that the London Hospital is deeply indebted to Prof Wright for his work during the past 27 years Though he was retiring from the office of dean, which was to be taken by Dr A E Clark Kennedy, he was retaining the chair of anatomy

Sir Kingsley Wood, Minister of Health who distributed the prizes, said he had always regarded the story of small beginnings and steadfast purpose as one of the fascinating of all the stories he knew When seven men met together nearly two hundred years ago in the bar parlour of The Feathers tavern, Cheapside to found this great hospital on a capital of a hundred guineas, they showed a vision and a courage that all must admire, but when, at a somewhat later date in another tavern, the treasurer reported that there was no more than a shilling in the bank and when they still carried on they showed more than courage they showed a continuity of purpose that was, perhaps, the greatest asset which any man or any institution could possess Are you poor ? Are you ill ? Can we help you ?—those were the guides of conduct to John Harrison, surgeon, aged 22, the leading spirit of the seven, all else—mere ways and means—could and did follow after And Sir Kingsley thought the mind of a great follower of that tradition, the late Lord Knutsford, must often have turned to that shilling and to the memory of John Harrison as a touchstone and an inspiration for the prodigious efforts that he made to keep London Hospital abreast of the advances of medical science and the needs of the suffering poor And about the year 1740 was one of those times of spiritual and intellectual stirrings of men s minds John Wesley was revitalising religion and not long before the great Samuel Johnson friend of David Garrick, had come to town and Pope had written that the proper study of mankind is man" And a hospital conscience seemed to have grown up in those days which might have been due partly to a reborn sense of duty to the sick poor and partly to a wholesome fear of catastrophic visitations of disease which were at that date all *too common* He asked his hearers to think sometimes of that fine old man who founded the medical school *of the London Sir William* Blizard who lived to the ripe age of 92 and to make themselves acquainted with the history of the struggles of those days. Sir Kingsley said it had been increasingly felt that the most important thing to treat was not merely the disease but the man Those who were in general practice were in the front line of the fight for better health All would agree that it was not enough to cure the stricken or to protect the community from disease the need more and more was for health builders Advice must be given not only on the postponement of death but on a way of life

Canadian Public Health Association

Dr George F Buchan medical officer of health for Willesden was among those who were elected to the honorary life membership of this association at its twenty-sixth annual meeting held lately at Toronto

Plans for St George s Hospital London

Rebuilding is to begin at this hospital within a year and will have to be in three sections. A million pounds will be required of which almost a quarter has been collected. During the last ten years 60 000 patients have been admitted to the hospital and nearly half a million out patients treated

New Hospital at Iver

The Duke of Kent on July 2nd opened the new Iver Denham and Langley Cottage Hospital of which he is the *patron* The site was *given by Miss* Ward *and is opposite* the old institution which was inadequate for its purpose

Infants Hospital Vincent square

The age-limit for patients at this hospital has been raised from five years to twelve Children from birth to twelve years of age are now therefore eligible for treatment

St. Andrew s Hospital Dollis Hill

The children s ward erected here at a cost of over £7000 *in* memory *of the late* Canon Carton de *Wiart* was opened and blessed by the Archbishop of Westminster on June 24th

King Edward VII Sanatorium Warwick

Sir Arthur MacNalty chief medical officer of the Ministry of Health opened the new clinic and ward block at this institution on June 28th

International Society of Medical Hydrology

The next annual meeting of this society which is open to non members, is to be held in Frankfurt-am Main and the neighbouring spas from Oct 17th to 22nd The members *of the congress* will be housed in Wiesbaden but the opening meeting and first discussion will be held at Frankfurt Meetings will also be held at Bad Nauheim and Bad Ems and a visit will be made to Schwalbach and Schlangenbad on the way to Eltville where a Rhineland vintage festival will take place After the meeting there will be optional excursions to Kissingen Heidelberg Würzburg Worms, Baden Baden and other places The subjects for discussion will be bio-climatology; psychological factors in health resort practice and the natural history of peloids (peats and muds) There will also be demonstrations of laboratory and experimental work and communications. Further information may be had from the secretary of the society 100 Kingsway London W C 2

Vacancies

For further information refer to the advertisement columns

Ayrshire Sanatorium Glenafton New Cumnock—Med Supt., £600

Barking Corporation—Res M O for Upney Maternity Hosp £350

Bath, Royal United Hosp—H P at rate of £250

Birmingham City—Asst M O for Maternity and Child Welfare £500

Birmingham City Education Committee.—School M O, £1100

Birmingham, Dudley-road Hosp—Asst. Pathologist £650

Bolton Royal Infirmary—Two H S s, each at rate of £150

Bootle General Hosp—H P two H.S s and Cas. O each at rate of £150

Bradford New Royal Infirmary—Res M O and Asst Pathologist, £225

Bradford Royal Eye and Ear Hosp—Two H S s, each £180

Brighton Royal Alexandra Hosp for Sick Children—H.P £120

Brighton Royal Sussex County Hosp—Cas. H.S., £150

Brighton, Sussex Maternity and Women s Hosp—Res H.S £130

Bristol City and County—Asst M O H £500

Burton Derbyshire Devonshire Royal Hosp—H P at rate of £150

Cambridge Addenbrooke s Hosp—H P and H.S each at rate of £130

Cardiff King Edward VII Welsh National Memorial Assoc—Res Asst. Tuber M O for Sully Hosp £500

Carlisle, Cumberland Infirmary—H S £155

Chesterfield and North Derbyshire Royal Hosp—H.S at rate of £150 Also Final year Student

Croydon County Borough—Asst. M O for Obstetrics £300

Doncaster Royal Infirmary—H.S £175

Derby, Derbyshire Royal Infirmary—Cas O and Orthopædic H.S. £150

Dumfries, Crichton Royal.—H P, £200

Durham County and Sunderland Eye Infirmary.—H.S £350

Durham, Sherburn Hosp—Res Asst. M O £200

Ealing King Edward Memorial Hosp—Cas. O and Deputy Res M.O at rate of £225

Eastbourne Royal Eye Hosp, Pevensey-road—H.S. £100

Evelina Hosp for Sick Children, Southwark S E.—H.S at rate of £120

Exeter Royal Devon and Exeter Hosp—Hon Consultant in Psychiatry

Fulham Metropolitan Borough—Res M O and Asst M O for Maternity and Child Welfare £350

Grimsby and District Hosp—Sen H.S and H P at rate of £300 and £150 respectively

Hampstead General and N W London Hosp, Haverstock Hill, N W—H.P Cas. M O and Cas Surg O each at rate of £100

Herefordshire General Hosp—H P £100

Hertford County Hosp—H.S at rate of £180

Hull Royal Infirmary—H.S to Ophth and Ear Nose and Throat Dept at rate of £150

India All India Institute of Hygiene and Public Health Calcutta Director Rs. 2500 per month.

Ipswich, East Suffolk and Ipswich Hosp—Cas O., at rate of £144

Kettering and District General Hosp—H.S and H.P at rate of £175 and £150 respectively

Kidderminster and District General Hosp—Jun H.S £100

Kincardine County—Deputy M O H., £600

King's College Hosp Denmark Hill S.E—Registrar to Children s Dept and M O to Rheumatism Clinic.

Leeds Public Dispensary and Hosp—Hon Physician

Leigh Infirmary Lancashire—Jun. H.S. at rate of £150

Lincolnshire (Kesteven) County Council—Asst. County M O H £600

Liverpool Royal Infirmary—Medical Tutor and Registrar £200

Liverpool Sanatorium Delamere Forest.—Jun. Asst to Med. Supt, £325.

Liverpool Stanley Hosp—H.S and Gynæcological H.S each at rate of £80

London County Council.—Res Med Supt. for Eastern Hospital £1100 Asst. M O s (Grade I) each £350 Asst M O s (Grade II) each £250

Manchester Abergele Sanatorium—Res. Asst. M O., £350

Manchester Ancoats Hosp.—Cas. O., £250 H.S to Ear, Nose and Throat Dept. and H.P to Hon Phys. at rate of £100 Also Asst Surg Officer *to Orthopædic Dept* 10s. 6d. per attendance.

Manchester Ear Hosp Grosvenor square All Saints—Res H.S £120

Manchester Prestwich Mental Hosp—Locum Tenent M O., 7 guineas per week

Manchester St Mary s Hosps—Asst Res Obstet O for Whitworth-street West Hosp £100

Market Drayton Cheshire Joint Sanatorium—Res H.P £350

Metropolitan Hosp Kingsland road E—Cas O and Res. Anæsthetist, £100

National Hosp for Diseases of the Nervous System Queen-square W C—Asst Physician. Also H P at rate of £100

National Temperance Hosp Hampstead road N W—Cas O at rate of £120

Newcastle-upon Tyne Hosp for Sick Children.—H.P and H.S each at rate of £100

New Zealand General Hosp Auckland—Deputy Med Supt £800

North Shields Preston Hosp—Sen Asst M O £150

Nottingham and Midland Eye Infirmary—Res H.S., £200

Oldham Municipal Hosp—Res. Surg Officer, £500

Oldham Royal Infirmary—Two H.S s and Cas O and H.P to Fracture Dept., each at rate of £1 5

Plymouth City General Hosp —Deputy Med Supt , £450

Plymouth Prince of Wales s Hosp Greenbank road —H S at rate of £120

Port of Spain City Council —M O H £800

Portsmouth Royal Hosp —Fourth H S and Cas O each at rate of £130

Portsmouth Saint Mary's Hosp —Sen Res M O , £350

Preston, Sharoe Green Hosp —Jun Asst Res M O at rate of £100

Reading, Battle Hosp —Res Asst M O £300

Rochdale Infirmary and Dispensary —Sen H S , £250

Rotherham Hosp —H S for Ophth and Ear Nose and Throat Depts £150

Royal Masonic Hosp Ravenscourt Park W —Two Res Surg Officers each at rate of £200

Royal Waterloo Hosp for Children Waterloo road, S E —Hon Clin Asst

St John s Hosp , Lewisham S E —Cas O at rate of £100

St Paul s Hosp for Urological and Skin Diseases Endell street W C —H S at rate of £100

Salisbury General Infirmary —Res M O £250

Sheffield Children s Hosp —H.S £100

Sheffield Royal Infirmary —H S Aural H S and H S to Orthopædic &c , Service each at rate of £80 Ophthal H S at rate of £120 Cas O at rate of £150

Southampton Royal South Hants and Southampton Hosp —Cas O Also Res Anæsthetist and H S to Ear Nose and Throat Dept , each at rate of £150

South Eastern Hosp for Children Sydenham S E —Res M O , at rate of £100

Southend on Sea General Hosp —First H S at rate of £100

Stoke on Trent Longton Hosp —H S £160

University College Hosp Medical School Gower street W C —Asst in Depts of Bacteriology and of Morbid Anatomy each £250

Wakefield Clayton Hosp —H S £175

Weir Hosp , Grove road, Balham S W —Jun Rés M O , £150

Weston super Mare General Hosp —Res H P , £150

Wolverhampton Royal Hosp —Asst Res M O for Gyn and Obstet Dept at rate of £100

Worksop Victoria Hosp —Sen and Jun Residents at rate of £150 and £125 respectively

Worthing Hosp —H S at rate of £130

Wrexham and East Denbighshire War Memorial Hosp —Res H S at rate of £150

Medical Referee under the Workmen s Compensation Act, 1925 for the Wolverhampton County Court District (Circuit No 26) Applications for appointment should be addressed to the Private Secretary Home Office Whitehall London S W 1 before 27th July

Appointments

BLACK J I M , M B Durh F R C S Eng Registrar to the Throat and Ear Department of the Royal Victoria Infirmary Newcastle-upon Tyne

BRADLEY J V M B Camb F R C.S Edin Hon Assistant Surgeon to the Coventry and Warwickshire Hospital

CAMERON, A J M B F R C.S Edin D O M S Second Ophthalmic Surgeon to the Sutton and Cheam Hospital

CLIVE, F T , M B Lond , Medical Superintendent at the National Sanatorium Benenden

GOLDHURST S V M A Camb M R C S Eng Physician in Charge of the Physio therapeutic Department of the Sutton and Cheam Hospital

LUBNER S H L R C P Lond , Assistant Medical Officer at the Cefn Coed Hospital Swansea

MCLEAN GLADYS F A M B Manch D P H Assistant School Medical Officer for Preston

POTTER A L M D Liverp M C O G Consultant Obstetrician to the Lancashire County Council the County Borough of Blackburn the Borough of Darwin and the Blackburn and East Lancashire Royal Infirmary

SUTTON SIMON, M B Manch Resident Surgical Officer at the Chesterfield and North Derbyshire Royal Hospital

TALBOT GRAEME M B N Z F R C.S Eng Hon Ophthalmic Surgeon to the Princess Louise Kensington Hospital for Children

TRUEMAN R S M B Lond. F R C S Edin Resident Surgical Officer at the Bury Infirmary

London County Council Hospital Staff —The following appointments promotions and transfers are announced A.M O (I) or (II) = Assistant Medical Officer Grade I or II Temp = Temporary Med Sup = Medical Superintendent

CURTIS F R M B Leeds Assistant Pathologist Whitechapel Clinic

MORTON WILLIAM M B Glasg A M O (I), St Clement s

ARMSTRONG J R M B Belf A M O (I) St George-in the East

CLARK H M M B Edin A.M O (I) St Andrew s ,

BAILEY G N M B Camb F R C.S Eng A M O (I) St James

SUTHERLAND H A M B Glasg A M O (II) Paddington

RAMSAY ISOBEL S W M B Aberd , A M O (II) Lewisham

KENT STEPHEN M R C S Eng A M O (II) Archway

BARRETT JOHN M B N U I A M O (II) St Andrew s

STERN DAVID M B Edin A.M O (II) Dulwich

LONGMUIR D O M B A M O (II) Bethnal Green

THOMAS NEST M R C S Eng , A M O (II) St Alfege s

MADIGAN D G M B N U I A M O (II) St Luke s, Chelsea

PALSER E G M M B Lond A M O (II), Archway

LEVINE DAVID M R C S Eng A M O (II) St Giles s

LAIRD G B L M B Glasg House Surgeon St Giles s

MUIR, ANDREW, L D.S R C S L R.C P Edin Temp Part time Dental Surgeon, Heatherwood

RANDLE ALAN, M D Lond , Med Sup St Giles's

YOUNG B A , M D M R C P Lond , Med Sup St Alfege s

KELLEHER W H M D N U I D P H , Med Sup South Western ,

WHEATON C E W M D M R C P Lond Senior A M O (I) St Peter s

KAHAN, ALEXANDER M D Lond , Senior A M O (II) St Alfege s

MACKEITH R C B M Oxon A M O (I) Paddington

ROBERTS J C , M B Lond A M O (I), St George-in the East

LAWSON, W S G M B Lond A M O (I) St Stephen s

FRIEDLAND COLIN M B Cape Town, A M O (II) Lewisham

SMITH J I M M R C S Eng A M O (II), St George in the East

HAMILTON MAX , M B Lond A.M O (II) Mile End

JOHNSTONE J G M B Aberd Consulting Orthopædic Surgeon attached to Central Medical Staff and

MOORE, ELIZABETH M M B Belf M C O G , Senior A.M O (II) Mile End

Certifying Surgeons under the Factory and Workshop Acts Dr J BINNIE (Longridge District Lancashire) Dr P GIBBIN (Whitland District Carmarthen) and Dr W WARD SMITH (Bradford East District of Yorkshire West Riding)

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

SOCIETY FOR THE STUDY OF INEBRIETY

TUESDAY, July 13th —4 P M (11, Chandos street W) Mrs L Blackett Jeffries M D Marriage in Relation to Alcohol and Drug Addiction.

PADDINGTON MEDICAL SOCIETY

TUESDAY, July 13th —9 P M (Tuberculosis Dispensary, 20 Talbot road, W) Mr A Lawrence Abel Common Diseases of the Rectum and Anal Canal with coloured cinematograph films of the Modern *Operation for Internal Hæmorrhoids, and of the Abdomino perineal* Excision for Carcinoma of the Rectum

WEST LONDON MEDICO CHIRURGICAL SOCIETY

FRIDAY July 16th —5 P.M (West London Hospital) annual general meeting

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL SANITARY INSTITUTE

MONDAY July 12th to SATURDAY —Health Congress at *Birmingham*

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1, Wimpole street, W

MONDAY July 12th to SATURDAY July 17th —ALL SAINTS HOSPITAL Austral street, S E Afternoon and evening post graduate course in urology —HOSPITAL FOR DISEASES OF THE SKIN *Blackfriars* road S E Afternoon course in dermatology —*Open* only to members of the fellowship

HOSPITAL FOR SICK CHILDREN Great Ormond street, W C

THURSDAY, July 15th —2 P M , Dr D N Nabarro Syphilis in Childhood 3 P M Dr G H Newns Colitis

Out patient clinics daily at 10 A M and ward visits at 2 p m

WESTMINSTER HOSPITAL

THURSDAY, July 15th —4 30 P M., Dr Donald Paterson *Children s Conference*

SOUTH WEST LONDON POST GRADUATE ASSOCIATION

TUESDAY, July 13th —4 P.M (St James Hospital, Ouseley road S W) Mr R L Dodds Version

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LORD NUFFIELD'S GIFTS —The Birmingham Hospital Centre has received a cheque from Lord Nuffield for £146,581 to cover the cost of the erection of the nurses' home and college of nursing Five years ago when it was decided to build the centre he gave £52,000 towards the scheme Towards the total cost of £1,250,000, the sum of £800,000 has already been subscribed Lord Nuffield has also given £30,000 to the Royal Berkshire Hospital Reading, in connexion with the centenary extension scheme which is to cost £150,000 His gift is to be used for the erection of a new block of buildings, containing a children s ward, a maternity ward, and a surgical ward

NOTES, COMMENTS AND ABSTRACTS

ADOPTION OF CHILDREN

AFTER many abortive attempts at legislation Mr Galbraith's Adoption of Children Bill reached the Statute Book on August 4th, 1926 and came into force on Jan. 1st 1927 thus placing the adoption of children on a basis as secure in this country as it is in nearly every civilised land. The procedure set up by the Act was entirely new and unfamiliar to the magistrates who were to administer it and for a long time it was by no means easy to get the intention of the legislature carried out smoothly except in the High Court. Gradually the magistrates have come to live up to their non penal functions and with the growth of juvenile courts the practice of legal adoption has steadily increased from year to year. In 1936 the total of adoption orders was 5180.

But this Act by no means solved completely the problem of the State's responsibility for "children maintained for a reward" and important additional safeguards came into operation on Jan 1st, 1933 when the second and fourth schedules of Part V of the Children and Young Persons Act 1932 came into force. Allegations of abuse in connexion with the adoption of children were freely made in Parliament and in January of last year Sir John Simon appointed a departmental committee to inquire into the methods pursued by adoption societies or other agencies engaged in arranging for the adoption of children and to report what measures should be taken in the public interests to supervise or control their activities. Miss Florence Horsbrugh M.P was chairman of this committee which had six male members of wide experience with Mr J A R. Pimlott of the Home Office as secretary.

Their report which was issued on Wednesday (H.M Stat Office Cmd 5499 1s) recommends that it should be an offence to carry on an adoption agency unless it is licensed by the local authority the conditions of the licence to be prescribed by the Home Secretary. The committee is definitely not in favour of restricting the arrangement of adoptions to public authorities or to societies specialising in adoption. They do not want adoption to become a State monopoly and are desirous that any organisation concerned with the welfare of children should be at liberty to take up this work but they regard some form of compulsion as essential. Evidence of hardship to children under the existing regulations left them in no doubt on this point. They were agreed although not quite unanimously that some form of licence would be the best method of regulating such adoption agencies as do not come under the Poor Law Act of 1930. A licence would only be granted if the county or local borough council decides that the agency is really a charitable society governed by a responsible committee and with competent and adequate staff for ensuring that the conditions of the licence are carried out.

It is to the conditions of the licence that the committee attaches so much importance for it would be impossible even if desirable for the licensing authority to inspect all homes in which children are placed. While admitting the much greater risk involved they would not dissuade private persons from arranging adoptions. The duty of notifying the Infant Life Protection Authority should however be laid on both the agent and the person receiving the child. Persons obtaining children from licensed agencies would be free from the supervision of the local authority to which those who obtain children from private agents would be subject. The effect of these proposals would place the licensed agency in a more favoured position than private agents and this is regarded as right and proper.

Other recommendations would make it impossible for a British child to be taken out of the country for adoption by foreign nationals. British subjects living abroad would require a licence from the Metropolitan police authority. It should the committee thinks be made an offence for any private person, without leave of the court, to receive payment for negotiating an adoption; and they would prohibit any advertisement offering or seeking children for adoption, except by the societies and agents regulated by licence.

There is much else of general interest in a report which bears the impress of careful observation and wise deduction.

ASTHMA FROM ANIMALS

IN a paper on bronchial asthma provoked by various animals A. de Besche points out that more and more cases of asthma prove on investigation to be allergic rather than nervous in origin (*Acta med scand.* 1937 92, 200) As long ago as 1909 he suggested that horse-asthma in man is due to anaphylaxis. Often the reaction is specific a response to a single antigen; but more often there are several trigger-substances thus a boy subject to horse asthma showed an asthmatic response also to hay, fish and strawberries. de Besche thinks that tolerance to an antigen cannot be acquired by allergic subjects and that treatment should aim at being preventive. This especially among town dwellers, is not so difficult as to be impossible but he quotes the case of a lady subject to cat-asthma who had an attack after eating hare ragoût in a restaurant and in persons with the appropriate hypersensitiveness even a strong smell of fish is said to have caused urticaria and asthma occasionally. de Besche describes a simple diagnostic test for susceptibility to animal asthma. The horse or other animal is touched with the finger which is then placed lightly on the patient's conjunctiva. A positive reaction consists in redness and sometimes œdema of the conjunctiva with a feeling of burning and itching in the eye.

CHILDREN'S QUESTIONS

CONSCIENTIOUS modern parents those patient oxen striving constantly if clumsily to do the right thing for their offspring have by now learnt that all children's questions are to be answered truthfully. The stork-cum-gooseberry bush mythology having been largely abandoned some have discovered to their surprise and relief that the young child is quite as unshockable as let us say a psychiatrist and indeed remains so unless instructed otherwise. But the abandonment of the convenient lies of a less enlightened age does not mean that the business of parenthood is simpler to-day than yesterday. On the contrary the parent's lot is less of a sinecure than ever and the prospect of being subjected to a perpetual viva-voce examination is probably a powerful deterrent to reproduction. To answer truthfully questions about the "facts of life" may present comparatively little difficulty but what of the countless other questions now possible? In *The New Era in the Junior School* E B Warr[1] quotes some of the posers set by junior examiners to their parents and teachers. "How heavy is the nucleus of an atom?" asks one little brute "Who

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[1] The New Era in the Junior School by E B Warr London Methuen & Co 1937 Pp 136 3s 6d

made God?" asks another and, again "How is it we grow without either feeling it, or knowing it?" asks a third A parent with special knowledge may, it is true, be offered an occasional full-toss to leg, so to speak, which gives him heart To such a one, for example, it may be child's play to explain simply and accurately how a refrigerator works, how gas is made, or the process of electro plating But let him beware of thinking prematurely that he has mastered the bowling

CEREBRAL CHANGES IN SPASMODIC TORTICOLLIS

TORTICOLLIS is not a cause of death and it is thus difficult to collect evidence of its pathology The spasmodic type in particular presents features which suggest degenerative changes in the basal nuclei, and B J Alpers and C S Drayer (*Amer J med Sci* March, 1937, p 378) have reported a case which bears out this view Their patient was under observation from the age of 33 until he died aged 90, and the opportunity arose to examine his brain at autopsy

The torticollis first appeared after an accident, when he was struck in the right eye which lost its sight The spasmodic movements of his head and neck that developed did not prevent his continuing his work as a fireman A second accident 12 years later resulted in a severe burn, and his mental condition was so affected that he had to be placed in hospital to prevent his committing suicide It was then found that he had a flattening of the right side of the face, and a definite impairment of the motor system The tongue had a coarse tremor, and the head was tilted to the left with the chin pointing to the right shoulder There were several types of involuntary movement of the head, including a coarse tremor, constantly present and exaggerated by emotion, and nodding, choreiform, and athetoid movements, some of which spread also to the shoulders and the hands The brain at autopsy showed atrophy of the neostriatum, severe disease of the large ganglion cells of the caudate nucleus and the putamen with less severe involvement of the small ganglion cells, the pallidal ganglion cells were moderately affected The cortex showed no specific changes and the other basal nuclei were normal. The vessels of the caudate and putamen were in good condition and showed no true sclerosis

Alpers and Drayer have found reports of four other cases of torticollis with post-mortem findings All showed degenerative changes in the brain. In three the changes were mainly confined to the corpus striatum, and were greatest in the caudate nucleus and the putamen of the thalamus In one case there was a more generalised change, with involvement of the cerebral cortex and cerebellum, as well as of the basal nuclei In another case the degeneration involved the frontal and parietal lobes of the right cerebral hemisphere Of the five cases, therefore, there were three with more or less purely striatal lesions, all giving clinical pictures of definite torticollis The suggestion is that further post-mortem examinations of similar cases might reveal a definite organic basis for the symptoms

THE CHEMICAL COMPOSITION OF TEETH

IT has been established beyond doubt that the tooth substance belongs to the apatite series, which is composed of tricalcium phosphate with either calcium chloride or calcium fluoride Probably because of this fluorine is commonly believed to be a normal constituent of teeth Recent spectroscopic researches by F Lowater and M Murray, however, show that this is not so (*Biochem J* 1937 31, 837) But they did find certain other unexpected elements —namely magnesium silver, lead, sodium strontium, barium, chromium, tin, zinc, manganese, titanium, nickel and vanadium These were all found in both enamel and dentine from non-carious teeth of Londoners as well as in the teeth of dogs and rats Chlorine and fluorine, although possibly present in traces in the human subjects, were definitely absent from both the dentine of dogs' and the enamel of rats' incisors In mottled teeth from inhabitants of Maldon, Essex, where the water-supply contains fluorine, the enamel yielded evidence of both fluorine and chlorine, while the former alone was found in the dentine Potassium was not found in either enamel or dentine of the Londoners, but its characteristic spectroscopic lines were observed—though they were "very weak"—in both parts of the Maldon mottled teeth Although the dentine from dogs' teeth contained no potassium, both control rats and those fed on a diet containing fluorine yielded more than traces of this element

The presence of silver and tin in rather larger amounts in the Maldon teeth than in those of Londoners—even when non-carious—may possibly be due to contamination with filling materials, although every care was taken to avoid this in the few specimens available The loss of pigment in mottled teeth seems to be associated with an iron deficit The presence of titanium and vanadium has not, apparently, been observed before The latter may have replaced phosphorus in the apatite complex, it has been found in the bodies of certain ascidians in the Mediterranean, but so far as we know has not before been found in mammalian tissues It is certainly not an element usually considered as present in tissues The occurrence of zinc is interesting in view of its presence in many tissues, bones being specially rich in this element, their zinc content amounting to 1 or 2 hundredths per cent

This investigation is one of a series carried out by Murray, who has investigated the extent to which magnesium replaces calcium in the apatite molecule and other elements or groups replace the typical halides of the native mineral apatite—chlorine and fluorine—as suggested by Robison

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Births, Marriages, and Deaths

BIRTHS

BALFOUR —On July 2nd at 3, Wilbraham place S W the wife of Dr G M Balfour of Clifton House Cowes of a son

FRANCE —On July 4th at Ludlow Bromley Common Kent the wife of Francis France M B, of a son

ITTNER —On June 7th the wife of Dr Martin H Ittner, of 3600 Hudson Boulevard Jersey City U.S A, of a son

KERWICK —On June 22nd the wife of Captain T R J P Kerwick Royal Army Medical Corps of a daughter

MURRAY —On July 4th at Welbeck street London the wife of Dr J Barrie Murray, of a son

ORLEY —On June 29th, at Sutton the wife of Dr Alexander Orley, of a son

PRIDIE —On June 24th the wife of Mr Kenneth Pridie F R C S Clifton Bristol of a daughter

PYRAH —On July 4th at Leeds, the wife of Mr Leslie N Pyrah F R C S, of a son

WILSON —On June 29th at St Dennis Cornwall, the wife of Dr C M Wilson of a son

MARRIAGES

DUNSCOMBE—CHANDLER —On July 3rd at Hampstead Parish Church Nicholas D Dunscombe M B, to Irene Elizabeth Chandler M R C S eldest daughter of Mr P W Chandler, Master in Chancery

KNIGHT—JACKSON —On July 3rd at the Wesleyan Church Skelmanthorpe Dr Wilfred Curtis Knight youngest son of Mr Ralph C Knight, of Stowmarket Suffolk to Barbara Mary, youngest daughter of Sir Percy Jackson

LITTLE—BEDFORD —On June 22nd, at the Cathedral Simla Captain J Little I M S M B, to Joyce Beryl younger daughter of Mr and Mrs Bedford of Simla India, and Roehampton

LOXTON—EDMONDS JONES —On June 26th, at St Mary's Church Longworth Geoffrey Ernest Loxton M B to Margaret Joyce only daughter of the Rev R Edmonds Jones Rector of Longworth, Oxfordshire

MAYNARD—FITZGERALD —On July 1st at St John the Evangelist Church Bath Edward Forster Maynard M D of Maresfield Sussex to Anne FitzGerald youngest daughter of the late Thomas FitzGerald of Carrigtowhill, co Cork

DEATHS

CLARKE —On July 4th at St. Thomas's Hospital following an operation John Andrew Clarke M B R U I Ivy House Luton Beds

HODGES —On June 29th at Burnley Alfred Ernest Hodges L R.C P L R C S Edin aged 68

N B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

ADDRESSES AND ORIGINAL ARTICLES

p-AMINOBENZENESULPHONAMIDE IN TREATMENT OF BACTERIUM COLI INFECTIONS OF THE URINARY TRACT*

By MEAVE KENNY M R C S Eng M C O G
FIRST ASSISTANT DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY BRITISH POSTGRADUATE MEDICAL SCHOOL, HAMMERSMITH HOSPITAL, L.C.C

F D JOHNSTON M D Alberta
ASSISTANT IN BACTERIOLOGY AT THE SCHOOL AND

T VON HAEBLER, M.D Jena

With a note on

THE TWO-PLATE BACTERIAL COUNT

BY A A MILES F R C P Lond
READER IN BACTERIOLOGY UNIVERSITY OF LONDON

IN December 1936 Huber described the striking results he had obtained with *p*-aminobenzenesulphonamide in the treatment of *Bacterium coli* pyelitis of children.

This paper deals with the clinical and bacteriological results of treatment with this drug (sulphanilamide) of 46 cases of *Bact coli* urinary tract infections causing symptoms in pregnancy the puerperium before and after gynæcological operations By the courtesy of our colleagues of the medical department of this hospital we have been able also to include a description of a few cases of pyelitis and cystitis treated in their wards by the same method

Routine of Treatment and Investigation

When clinical diagnosis has been made a catheter specimen of urine is sent to the bacteriologist for direct examination and culture The administration of sulphanilamide is begun as soon as this first specimen has been withdrawn Catheter specimens are subsequently sent for culture estimation of bactericidal power and concentration of sulphanilamide on two fixed days of each following week or as often as required by those of us (F D J and T von H) who carried out the bacteriological and chemical examinations In the first twenty or so cases we considered a bacterial count to be necessary on each specimen for we had anticipated only a gradual decline of the infection When we found that the urine almost invariably had become sterile at the second examination, even when, as sometimes happened treatment had been carried out for [illegible] y two days we spared ourselves the trouble [illegible] riginal infection was thereafter recorded as [illegible] *ary* (10–150 millions per c cm) *heavy* (5–10 millions) or *moderately heavy* (750 000–5 millions) We did not treat patients in whose urine only a scanty growth of organisms was found.

The preparation of p-aminobenzenesulphonamide we have used is the Bayer product marketed as Prontosil Album issued until recently in 0 3 gramme tablets and now in 0 5 gramme tablets We give our patients 0 5 or 0 6 gramme three times a day by mouth for five to seven days No other treatment is employed nor is there any restriction of diet or fluids There appears to be no need to administer accessory acid or alkali, as the treatment is clinically effective over a fairly wide range of *p*H values 5·2 to 6 8 of the urine

Results

PYELITIS OF PREGNANCY

Of the 16 patients with pyelitis of pregnancy 12 were treated with sulphanilamide in the acute stage of a first attack, as soon as admitted to the antenatal wards with symptoms of renal pain and tenderness pyrexia and malaise in addition to pyuria and bacilluria We recount this familiar syndrome to show that we have been careful to treat *Bact coli* infection of the urinary tract both in pregnancy and the puerperium only when, in our opinion the morbid symptoms have been excited by the presence of the organisms We have not treated accidentally discovered bacilluria but bacilluria causing symptoms We stress this point because Dodds (1927, 1932) has shown that 7 5 per cent of all pregnant women harbour *Bact. coli* in the urinary tract, but that only 1 per cent. or less develop pyelitis, Another 4 subacute cases had low or no pyrexia but had renal pain and tenderness and bacilluria. Two of these were treated for the first two days on massive doses of alkalis and given sulphanilamide later to sterilise the urine in one case after mandelic acid had failed to effect this

Summary of Clinical Results

Clinical diagnosis.	Cases.	Urine sterile in (aver)	Dosage	Duration of treatment.
Pyelitis of pregnancy	16	4 days.	0 5–0 6 g (7½–9 gr) t.i d	5–7 days
Urinary tract infection in the puerperium	17	4		5–7
Pre- and post-operative urinary tract infection	9	3		4–5
Pyelitis	2	3		7
Cystitis	2	2 7		7
Total	46			

In every case of a typical *Bact coli* infection the drug appeared to bring about a rapid remission of symptoms and sterilisation of urine Temperature and pulse-rate fell to normal in an average of forty eight hours after treatment had begun. The urine however heavily loaded with pus and bacteria at the first examination became free of both in 2–5 days Five of the patients had albuminuria or other signs of pre-eclamptic toxæmia before treatment was instituted for pyelitis, but in none was the condition aggravated in any way Spontaneous premature termination of pregnancy occurred in 2 cases during the administration of sulphanilamide and after acute symptoms of pyelitis had subsided. One patient had had intermittent uterine bleeding since early pregnancy and was receiving treatment with endocrine preparations She miscarried at the twenty-sixth week. The other was delivered of a thirty-seven weeks old fœtus three days after ceasing treatment with sulphanilamide The baby was perfectly healthy although the mother's blood showed traces of met- and sulph hæmoglobin

This seems to be the appropriate place to describe our one failure the only case from our wards not included in this series

The patient a woman of thirty was admitted to hospital in the twentieth week of her first pregnancy with slight albuminuria, pyuria, and bacilluria A heavy growth of an atypical *Bact coli* was isolated from the urine Intermittently, during the remainder of the pregnancy, she developed subacute attacks of pyelitis, and the albuminuria persisted at a fairly constant low level Treatment with large doses of alkalis always abated the clinical symptoms, but our repeated efforts to sterilise the urine with hexamine or sulphanilamide failed completely, and mandelic acid nauseated the patient and could not be given a fair trial In the puerperium, pyuria and bacteriuria (still of the atypical variety of *Bact coli*) persisted, although without other clinical symptoms than lassitude and a general lack of well being, unaffected by renewed treatment with sulphanilamide Intravenous urography during pregnancy showed nothing beyond marked dilatation of the kidney pelvis and ureters, and now, nearly two months after delivery, the patient still has an infection of the urinary tract with an organism that seems highly resistant to bactericides

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* This paper was communicated to the Medical Research Society on May 7th 1937

The *immediate prognosis* of pyelitis of pregnancy treated with sulphanilamide is therefore very good "A complete cure of the pyelitis during the pregnancy in the sense that the urine becomes sterile," to quote Browne (1935), was obtained in every case of a typical *Bact coli* infection None has developed a chronic pyelitis Pyrexia is limited to 2–3 days only, and there seems to be no reason to anticipate the return of an acute attack later in pregnancy or in the puerperium One patient in the series was treated early in pregnancy, during a severe attack, with complete success This was the more notable, as the same woman had had to have her first pregnancy terminated twenty-eight months before for recurrent severe pyelitis she is now eight weeks from term and has had neither clinical nor bacteriological relapse

Recurrences—Six patients to our knowledge have had during pregnancy, at varying intervals after treatment, a recurrence of bacteriuria It is possible that this figure is even higher, but, as we deprecate the frequent catheterisation of pregnant women, we have not attempted to assess the relapse rate more accurately Relapse with clinical symptoms, however, has not occurred in the series, and there are now only 2 women undelivered, and in the last few weeks of a since uneventful pregnancy

Sulphanilamide (approximately 0 5 mg per 100 c cm) was recovered from the amniotic fluid of one patient under treatment for pyelitis complicating an acute hydramnios which necessitated frequent tapping of the uterus through the abdominal wall.

PROPHYLAXIS AGAINST STREPTOCOCCAL INFECTIONS

With Colebrook and others (1936) one of us (M K) held the hope that sulphanilamide might prove effective in temporarily immunising women exposed to the risk of streptococcal infections However, in the fact that two of our patients developed acute tonsillitis due to the *Str hæmolyticus*, Group A during treatment,we find evidence that, at least with the small dosage that we employ, this hope is not to be realised

URINARY TRACT IN INFECTION OF THE PUERPERIUM

Seventeen patients with *Bact coli* † infections of the urinary tract and pyrexia (with or without pathogenic organisms in the genital tract) have been treated with sulphanilamide and have responded as rapidly and completely as in pregnancy In every case the symptoms abated in two to three days, and the urine became sterile and free from pus in an average of three days So far, three months later, there has been only one case with clinical and bacteriological relapse, and she was rapidly relieved by the same means

PRE- AND POST OPERATIVE URINARY INFECTIONS

These were mainly cases of chronic cystitis, occasionally of several months' or years' duration Of the 9 treated in the gynæcological wards 7 had plastic operations performed for the relief of genital prolapse In 4 of these a gross infection causing symptoms was relieved before operation, 3 patients were treated after operation for dysuria, frequency, and pyrexia due to the presence of large quantities of pus and bacteria in the urine The eighth case developed pyrexia and dysuria after vaginal hysterectomy, and her symptoms subsided very quickly (2 days) after treatment had been begun. The ninth patient was found to have bacilluria and pyuria on admission for laparotomy, and was rendered rapidly free from infection and dysuria before operation

CASES TREATED OUTSIDE THE OBSTETRICAL WARDS

In the medical department 4 patients with urinary infections have been treated One was a patient with disseminated sclerosis and defective bladder control. Although we had not hoped to do more than temporarily to relieve the infection, we are told that dysuria and incontinence were greatly improved as the numbers of pus cells and bacteria lessened. It is interesting to note that in this case the infection was a mixed one, *Proteus vulgaris* and *Bact coli*, and that, whereas the *Bact coli* disappeared after three days of treatment, the proteus was more resistant, and it took seven days to clear the urine completely Partial relapse has been inevitable in this case, but the original type of infecting organism has not reappeared, and it is hoped that small daily doses of sulphanilamide now being given will diminish the infection and relieve symptoms Two other patients had chronic pyelitis of some months' duration, which had resisted other methods of treatment, including mandelic acid, but yielded rapidly and permanently to sulphanilamide The fourth was a case of acute cystitis of ten days' duration, unrelieved by large doses of alkalis and sedatives Twelve hours after starting treatment with sulphanilamide frequency and dysuria ceased, forty eight hours later the urine was free from the pus cells and *Bact coli* with which it had been heavily loaded Relapse has not been reported in any of these last cases

Toxic Effects

The incidence of sulphæmoglobinæmia and methæmoglobinæmia has been low, 7 cases only developed the characteristic livid tinge of lips and skin, and showed in their blood the typical absorption bands Two others appeared temporarily cyanosed, but examination of the blood failed to confirm the diagnosis None of the patients were aware of or complained of any symptoms attributable to the blood changes, and the discolouration, except in one case where it persisted for two weeks, faded in less than a week The development of this discolouration, if for cosmetic reasons alone, remains the only serious drawback to this method of treatment that we have encountered The administration of sulphates and saline purgatives was forbidden during treatment with sulphanilamide

No other toxic manifestations were apparent in the acute pyelitis of pregnancy cases, "stuffiness" and slight headache were uncovered on questioning in about half the puerperal and gynæcological cases

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† One with a mixed infection *Bact coli* and *Bact lactis aerogenes*

In no instance were these symptoms severe or lasting We were never forced to discontinue administration of the drug before cure was complete although when sulphæmoglobinæmia or methæmoglobinæmia developed we stopped treatment as soon as the urine was reported clear and the clinical manifestations of infection had subsided

As mentioned above 2 women had premature spontaneous termination of pregnancy during or shortly after treatment with sulphanilamide. In one this catastrophe appeared inevitable the second patient, despite the recent development of sulphæmoglobinæmia was delivered of a healthy five pound baby which throve

Comparison with Other Urinary Disinfectants

It may be thought that with so efficient a remedy for urinary infections as mandelic acid already in our hands the introduction of sulphanilamide is unnecessary In our experience however the administration of mandelic acid has some serious drawbacks in obstetrical practice The ritual necessary to success is not well tolerated by the pregnant woman the limitation of fluids and the occasional need for large auxiliary doses of ammonium chloride or sodium phosphate are trying to a nauseated and febrile patient and even when her coöperation has been assured the mechanical factors underlying pyelitis of pregnancy cause the treatment very often to fail completely In personal communications colleagues here and abroad confirm these observations In the puerperium mandelic acid is generally more useful, but even then is more valuable and better tolerated when the acute stage of an infection has been abated with alkalis and the acid is used later to sterilise the urine In our experience treatment with mandelic acid or hexamine often fails when the urinary infection is complicated by the presence of an inflammatory mass in the pelvis another drawback is the length of time necessary to effect complete sterilisation of the urine—ten to twenty-one days with mandelic acid (Rosenheim 1935) as against two to five with sulphanilamide

The *comparative cheapness* of treatment with sulphanilamide is also worth consideration The cost for an average case is between 3s -4s less than half that for even the shortest period of treatment with mandelic acid.

In vitro Tests of Bactericidal Power of Urine

The administration of sulphanilamide to the first few patients of the above series resulted in apparent sterilisation within an average time of four days of urines which prior to treatment had contained between 25 to 125 million *Bact. coli* per c.cm In vitro tests were then undertaken in order to obtain additional evidence of the bactericidal power of the drug

Freshly voided specimens of *urine* were collected from patients under sulphanilamide treatment The reaction was adjusted to *p*H 6 by the addition of N/1 sodium hydroxide or 10 per cent phosphoric acid as necessary (Garrod 1935) Brom-cresol purple was used as the indicator The urine was then sterilised by passing it through a Seitz F K. filter and distributed in exact 5 c cm amounts in sterile 5 in by ½ in tubes. Tests made on a few specimens showed that filtration caused no change in the sulphanilamide content or *p*H of the urine One tube from each specimen was incubated as an uninoculated control in 40 specimens this was contaminated only once

The test *organisms* were freshly isolated strains of *Bact. coli* obtained chiefly from patients in the above series. The test cultures were grown for four hours in heart broth at 37° C Viable counts were made and at the same time four 5 c cm amounts of each urine were inoculated with 0·02 c cm of increasing tenfold dilutions of a culture so that they received respectively about 100 000 10 000 1000 and 100 organisms per c.cm The number of organisms inoculated was determined more exactly by the result of the viable count which was read the following day The urine cultures were incubated at 37° C for twenty four hours and at the end of that time viable counts were made of each of the four urinary cultures

VIABLE COUNTING METHOD

The laboratory methods of determining the number of living organisms in a culture yield approximate values only In testing the bactericidal power of a solution, a relatively small inoculum of the bacterium is added to the solution and counts made to determine whether it is killed or multiplies freely It is important therefore to know what reliance can be placed upon the viable count method for it is possible to obtain results that apparently indicate either a growth or a death of the bacteria which in reality can be attributed only to sampling errors and to errors in the technique of counting

The method used in this investigation was a modification of one described by Miles (1936)

One fiftieth of a c cm of each increasing tenfold dilution of the culture of urine is allowed to fall from standardised dropping pipettes on to the surface of marked areas of over-dried McConkey agar plates. The fluid spreads over an area about 20 mm in diameter and is rapidly absorbed After incubation the drop areas yielding the largest number of discrete colonies are counted With coliform organisms on McConkey agar plates the colony size is such that counts in the drop area of up to 25 may be made larger numbers of colonies tend to be confluent By this technique surface viable counts of a large number of specimens can be made rapidly

The method which has been used in this laboratory for two years gives consistent results in the hands of experienced workers The error attributable to technical variations is small provided that the medium is suitable for the organism counted and is constant in growth promoting properties. The number of colonies developing in countable drop areas from a given dilution of culture are in reasonable accordance with a Poisson distribution and have a variance approximating to the mean Owing to the large number of tests made two plates only were used for each estimation of the number of bacteria in each suspension A note on the reliability of the two plate surface-viable count by Dr A A Miles is appended below

It can be shown that, expressing the viable counts as logarithms an increase or a decrease in the log of the count of 1·7 or more is significant The present series of experiments tests the bactericidal power of urine, so that a drop in the log count of less than 1·7 indicates a bacteriostatic power only But if the same criterion is applied to a rise in the log count some urines which actually allow slight growth will fall into the bacteriostatic class and since even bacteriostasis is a therapeutically desirable condition in a urine the value of the drug may consequently be over-estimated To be on the safe side therefore a *fivefold increase* corresponding to a rise of 0·7 only in the logarithm of the count was considered as evidence of multiplication of the inoculum

In Fig 1 for example the inoculum at c of 10 000 organisms is considered to have multiplied if the log of the final count lies between B_1 and c Between

B_1 and B_2 lies the range of bacteriostasis, and below B_2 the range of killing The lines OG and OS, at the extremes, indicate free growth and "sterilisation" respectively

BACTERICIDAL TESTS ON URINE

"Normal" urines—Ninety six tests were made on 7 specimens of urine from normal adults and on 10 specimens from patients in this series before receiving sulphanilamide Each strain of *Bact coli* used in the investigation was tested for growth at least once in a sulphanilamide free urine In each case an inoculum of about ten organisms per c cm had increased after twenty four hours' incubation to approximately 100 million

Urines of patients treated with sulphanilamide—It has been shown by Fuller (1937) and Marshall, Emerson, and Cutting (1937) that sulphanilamide is excreted in the urine in two forms, a combined and a free Quantitative estimations of these were made on most of the specimens used for the bactericidal tests When sulphanilamide content is mentioned it is the amount of the free drug that is referred to unless otherwise stated There are two reasons for this first, in the specimens tested the ratio of free sulphanilamide to total was nearly always the same, and second because there is reason to believe that the method of estimating the free is more reliable than that used for estimating the total

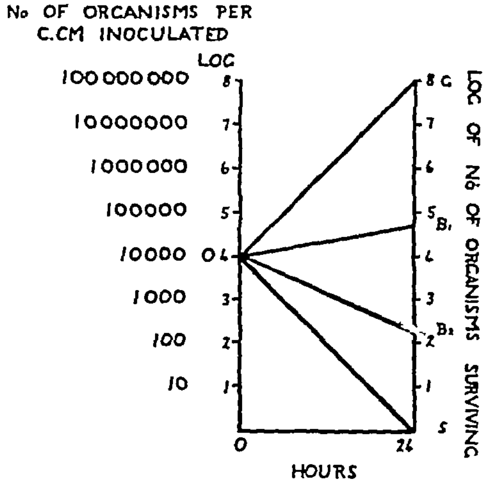

FIG 1.—The hypothetical fate of an inoculum of 10 000 organisms of *Bact coli* after 24 hours incubation in a urine containing sulphanilamide

It is possible that the apparent bactericidal effect of sulphanilamide described below, might be due merely to inhibition of growth exerted by the drug carried over from the urine cultures to the surface of the count plates To test this possible fallacy the following experiment was made It was estimated that the surface of a whole plate was twenty five times greater than the surface spread of 0 02 c cm of inoculum Six McConkey plates were each flooded with 0 5 c cm of a specimen of urine to which sulphanilamide had been added so that it contained 150 mg per 100 c cm , which was a higher content than was found in any of the urines used for bactericidal tests When the fluid had been absorbed duplicate counts were made on these plates and on an equal number of untreated McConkey agar plates of a culture of the strain (No 17) which had shown the greatest susceptibility to sulphanilamide The results of the two counts were identical, showing that the sulphanilamide was not present in sufficient concentration to influence growth on the plates

The explanation of this fact seemed to be that the sulphanilamide solution diffused through the solid medium so that the concentration at the surface of the plate was low Experiments testing the diffusibility in agar of a urinary solution of Prontosil "red" proved this to be a reasonable assumption The diffusion was such that the concentration of the drug on the surface area covered by one drop (0 02 c cm) would at most be 1/50, and more likely 1/100 of that in the original solution

Figs 2, 3, and 4 show the results of culturing five strains of *Bact coli* in three urines of different sulphanilamide content They are representative of the findings in a number of tests and demonstrate (*a*) variations in susceptibility between the strains, and (*b*) that the bactericidal action is increased with a higher sulphanilamide concentration The bactericidal tests performed are summarised in Tables I, II, and III

In these tables GG indicates that the log of the number of organisms per c cm after 24 hours' incubation was greater by 4 or more than the log of the number of organisms inoculated SS indicates a decrease of the same order G, B, and S indicate growth, bacteriostasis, and "sterilisation" respectively, as already demonstrated in Fig 1 It should be emphasised that "sterilisation" merely indicates that after 24 hours' incubation some of the inoculated organisms had been destroyed, and *not* that the cultures had necessarily been rendered sterile

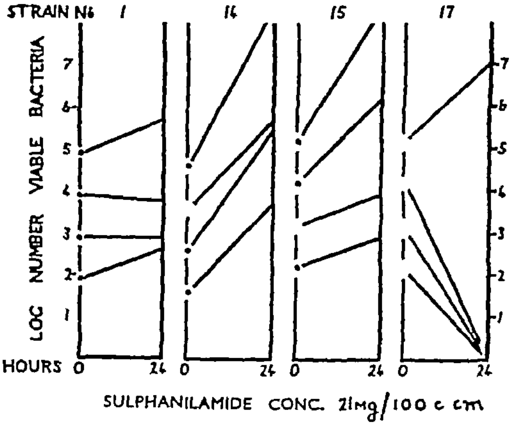

FIG 2 —Results of culturing four strains of *Bact coli* in a urine (P.) of low sulphanilamide concentration

Table IV is a summary of Tables I, II, and III, showing the percentage of tests in which growth (GG or G), bacteriostasis, and "sterilisation" (S or SS) were observed The *results of the tests on normal urines* are included The four tables demonstrate conclusively that the bactericidal action of the urine is dependent on the sulphanilamide content

The early tests in this series were made on specimens of unknown sulphanilamide content, and these are included in Table V together with the results of a few tests made with one strain each of *Proteus vulgaris* *Bact aerogenes*, *Streptococcus fæcalis*, and *Staphylococcus aureus* All strains except the last named were freshly isolated from urinary infections The strain of staphylococcus was isolated from a case of puerperal mastitis

Table V shows that the strains of *Bact coli* tested can be divided into three groups according to their susceptibility to the action of sulphanilamide There is a resistant group a non resistant group and an intermediate group of a few strains which could not be classified in either of the other two The morphology colonial, biochemical, and other characteristics of these strains were investigated They all gave typical coliform colonies on solid media failed to grow in Koser's citrate fermented lactose formed indol in peptone water and were V P negative and M R. positive With regard to fermentation of sucrose and salicin, and motility all but Nos 2, 3 7 11 and 13 were of the *commune* type Nos 2 and 3 were of the *acidi lactici* and *neapolitanum* types respectively (Topley and Wilson 1936) No association between the type of organism and susceptibility to sulphanilamide was demonstrable.

In regard to the organisms other than *Bact coli* no conclusions can be drawn from the small number of tests made It is worth noting however that the

TABLE I

The fate of different strains of Bact coli *cultured in urines having a sulphanilamide content of from 3 to 24 5 mg per 100 c.cm*

Strain	Mean sulphanilamide content mg /100 c cm	No of urines	Result 24 hours incubation.				
			GG	G	B	S	SS
1	17 5	8		2	4	2	
2	16 5	3	1	[illegible]			
8	17 3	3		3			
9	17 8	6	3	3			
11	15 3	5		[illegible]		2	1
13	12 5	[illegible]		1	1		
14	19·0	8	1	6	1		
15	18 2	7	2	3	2		
17	18 5	6		1	1	3	1
Total		48	7	23	9	7	2

TABLE II

The fate of different strains of Bact coli *cultured in urines having a sulphanilamide content of from 28·4 to 47 mg per 100 c.cm.*

1	41 4	2			1	1	
8	40·0	1		1			
9	39·0	4		3		1	
11	43 5	[illegible]				1	1
13	47·0	1		1			
14	43 3	3		3			
15	40 1	3	1	1	1		
16	28 5	1		1			
17	37 1	3			1	2	
Total		20	1	10	3	5	1

TABLE III

The fate of different strains of Bact coli *cultured in urines having a sulphanilamide content of from 51 7 to 100 mg per 100 c.cm*

1	72 8	7			[illegible]	4	1
2	61 2	1					1
8	60·0	1		1			
9	83·0	5		2	1	1	1
11	7 1	5				3	2
13	51 2	1		1			
11	80·[illegible]	4		1	[illegible]	1	
15	86 3	6		3	1	1	1
16	74 3	2				1	1
17	86 5	6				3	3
Total		38		8	6	14	10

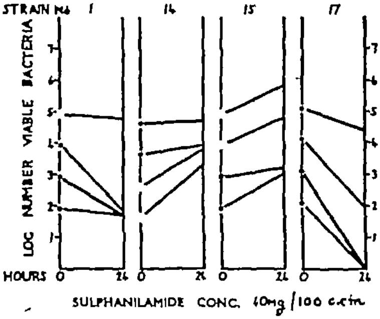

FIG 3.—Results of culturing four strains of *Bact coli* in a urine (U$_2$) of moderate sulphanilamide content.

TABLE IV

Summary of Tables I to III

Sulphanilamide content mg /100 c.cm	No of urines.	Results in percentages after 24 hours incubation		
		G	B	S
0	96	100	0	0
3–24·9	48	62 5	18 7	18 8
25–49 0	20	55	15	30
50–100	38	21·0	15 7	63 3

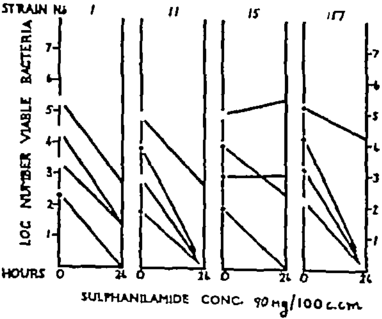

FIG 4.—Results of culturing four strains of *Bact coli* in a urine E(P$_1$) of high sulphanilamide content

Streptococcus fæcalis was the only completely resistant organism This is borne out by the fact that in five of the cases under treatment with sulphanilamide this organism was found in the urine after the original infecting agent (*Bact coli*) had disappeared

TABLE V

Organism		Sulphanilamide urines Number tested	Fate of each strain in sulphanilamide urine		
			Free growth	Bacteriostasis	' Sterilisation '
Bact coli	No 1	26	2	9	15
	11	17	2	1	14
	17	16	1	2	13
	3	8		2	6
	4	8			8
	16	4	1		3
	6	7	1	1	5
	7	7	1	3	3
	2	12	4	3	5
	13	8	4	2	2
	9	22	14	4	4
	14	18	14	3	1
	15	17	10	5	2
	8	11	9	2	
	10	3	3		
Bact aerogenes	12	2	1	1	
Prot vulgaris	19	2		2	
Strep fæcalis	18	3	3		
Staph aureus	20	2		2	

The dependence of the bactericidal power of sulphanilamide upon the nature of the individual infecting strain was demonstrated in the treatment of mixed *Bact coli* and *Bact aerogenes* infections In one male patient (not included in this series) the urine was rendered free of *Bact coli* but remained heavily infected with *Bact aerogenes* In another case the two organisms disappeared from the urine at the same time Both the aerogenes strains mentioned above were typical, forming mucoid colonies on agar, they produced acid and gas in lactose, sucrose, and salicin, grew in Koser's citrate, were V P positive and M R and indol negative

Biochemical Examinations

Estimation of sulphanilamide in urine was carried out by the method of Marshall et al (1937) in which the diazotised urine is coupled with dimethyl α naphthylamine

The accuracy of the colorimetric readings was much enhanced by the use of a green light filter and standard solutions could be eliminated by employing a neutral grey screen (King, Haslewood, and Delory 1937) Light absorption curves of the treated urine and of sulphanilamide were obtained against the neutral grey screen, and provided evidence for the assumption that most of the colour producing substance in the urine is sulphanilamide

It was found that the colour increased slightly up to 10 minutes after adding the α naphthylamine, then remained constant up to 30 minutes, and after one hour had begun to fade appreciably The test should therefore be read between 10 and 30 minutes after the addition of the naphthylamine All the estimations were made under standard condition by one observer (T von H)

The values for free sulphanilamide in the 24 urines examined ranged from 0 mg /100 c cm to 100 mg /100 c cm , those for the total sulphanilamide from 0 mg /100 c cm to 196 mg /100 c cm

The ratio of free to conjugated sulphanilamide varied from 1/0 56 to 1/1 69, with a mean of 1/0 98 and a standard deviation of ±0 27 In the majority of cases the total sulphanilamide was very nearly twice the amount of free sulphanilamide, regardless of the concentration of the substance present A similar cluster of ratios round the 1/1 point was observed by Fuller and occurred in about 50 per cent of the results of Marshall et al No explanation for this observation can be offered A study of the literature on the excretion of substances administered by mouth produced no strict analogies, although it was found that, in the case of some of the substances which are excreted unaltered in the urine, conjugation with various compounds took place in fairly constant ratios—e g , phenylacetic acid after ingestion combines in man with glutamine and glucuronic acid in the proportion of about 18 to 1 (Ambrose, Power, and Sherwin 1933), and benzoic acid is conjugated in the dog with glucuronic acid and glycine in the ratio of roughly 3 to 1, while phenylacetic acid is combined with glucuronic acid and glycine in the ratio of approximately 1 to 2 (Quick 1928)

In three urines which were re-examined after having stood at room temperature for 3 weeks the ratio was found to be altered, the values for free sulphanilamide had remained constant, while the total estimation showed significantly higher results than in the fresh urines The number of examinations is small and a possible source of error is the method of hydrolysis, which does not completely exclude small variations in the degree to which this reaction takes place

Discussion of Bactericidal Tests

The method used in these experiments for counting the number of viable organisms is one which allows a large number of counts to be made in a comparatively short time In an investigation of this kind a large number of independent tests is desirable not only because of the variation in susceptibility between different strains or organisms but because the different specimens of urine used as culture media are certain to show variations in their constituents which render them relatively favourable or unfavourable for bacterial growth, and the results of testing the bactericidal effect of a few specimens of urine against one strain of *Bact coli* would very likely lead to fallacious conclusions

The results of the in vitro tests of the bactericidal action of sulphanilamide lead one to expect that clinical results from treatment would not be uniformly good This has not, however, been our experience For instance, strains No 14 and 15 though resistant to the action of sulphanilamide in vitro were isolated from infections which rapidly cleared up under treatment The patient infected with strain No 14 had an acute attack of pyelitis in the 22nd week of her pregnancy Before treatment a bacterial count made on the urine showed 75 million organisms per c cm Within five days' treatment the urine was sterile Strain No 15 was isolated from a case of puerperal urinary infection The urine before commencing sulphanilamide contained 125 million organisms per c cm and was rendered sterile in three days by treatment

It should be noted that the dosage of sulphanilamide used in treatment of our cases was relatively small and it is quite possible that using large doses a concentration of the drug could be obtained in the urine which would in vitro exert a more consistent bactericidal effect ‡

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‡ Since the completion of this investigation a report has been noted in the *Proceedings* of the Staff Meeting of the Mayo Clinic April 21st 1937 which appears to support this contention

Of the other urinary antiseptics commonly used Garrod in 1935 showed that only hexamine exerted any appreciable bactericidal action in vitro. Since then Rosenheim (1935) in this country and Helmholtz and Osterberg (1936) in America have demonstrated the effectiveness of mandelic acid. From Garrod's experiments since he used only one strain of *Bact. coli* no conclusions can be drawn as to whether or not different strains might show variations in susceptibility to hexamine. The bactericidal action of mandelic acid depends on two factors—a sufficiently high concentration of the drug and a low *p*H of the urine. These two drugs apparently act only by virtue of their presence in the urine. Sulphanilamide which may be present up to a concentration of 20 mg. per 100 c.cm. in the blood (Marshall et al.) might be expected to exert a bactericidal, or at least a bacteriostatic action in the tissues similar to its action in experimental infection with *Streptococcus hæmolyticus* (Colebrook, Buttle, and O'Meara 1936) which could account for a therapeutic efficacy beyond that indicated by the in vitro tests.

Conclusions

1. Small oral doses of *p*-aminobenzenesulphonamide effected the rapid disappearance of *Bact. coli* and pus cells from the urine and remission of symptoms in 46 women with urinary tract infections.

2. Failure to relieve infection and symptoms was not encountered in typical *Bact. coli* infections. In a single case atypical coliform organisms were unaffected by the drug, but *Bact. aerogenes* and proteus infections yielded to treatment in two instances.

3. Return of bacteriuria was found to be fairly common in pregnant women, but relapse with clinical symptoms did not occur in a series of 16 cases of pyelitis of pregnancy.

4. The rapidity of action and simplicity of administration of sulphanilamide make it especially valuable in pyelitis of pregnancy and in the pre-operative treatment of gynæcological patients. The cheapness of this drug compared with other urinary disinfectants is an additional reason for its employment.

5. Toxic manifestations of sulphanilamide administration, such as sulphæmoglobinæmia, methæmoglobinæmia and headache appeared in a few patients but were not taken as an indication to discontinue treatment.

6. Sulphanilamide administered by mouth renders the urine bactericidal to certain members of the *Bact. coli* group.

7. The bactericidal power of the urine is roughly proportional to the sulphanilamide content.

8. Strains of *Bact. coli* are not all equally susceptible to this bactericidal action, some being almost completely resistant.

9. Strains which are resistant to the bactericidal action of sulphanilamide in vitro are not necessarily so in vivo.

We would like to record our gratitude to Prof. James Young and Prof. F. R. Fraser for allowing us to publish accounts of cases treated in the obstetrical, gynæcological and medical departments. We also wish to thank warmly Dr. Miles, Mr. E. J. King, Ph.D., and Mr. G. A. D. Haslewood, Ph.D., for their encouragement and assistance in laboratory investigation, and the resident staff of the obstetrical department for their coöperation.

A Note on the

RELIABILITY OF THE TWO-PLATE SURFACE-VIABLE BACTERIAL COUNT BY A. A. MILES

Assuming that the distribution of the individual counts does approximate to a Poisson distribution, an estimate of the significance of the difference between any two such counts may be made. The mean of a two-plate count is m, the standard deviation $\sqrt{m}$, and the standard error of the mean $\sqrt{m/2}$. The standard error of the difference between two means m_1 and m_2, will be $\sqrt{(m_1+m_2)/2}$. In Table VI there are four specimen counts C1 to C4 for comparison. With 25 as the maximum and 3 as the minimum number countable in a drop area, the difference between C1 and C2, the largest possible by this method, is $25-3=22$, with a standard error of $\sqrt{(25+3)/2}=\pm 3\cdot74$, and the difference in terms of its standard error is 5·88. This last value is "Student's" t, to the estimate of which each mean contributes one degree of freedom. In Fisher's (1930) table of t, N therefore is 2, and 5·88 corresponds to a probability of less than 1 in 30. Adopting as a criterion of significance a probability of 0·01, the difference between two means, to be significant, must be at least 9·925 times its own standard error. No difference therefore between any pair of two-plate counts made *in the same dilution* is statistically significant. Comparing counts C1 and C3 in dilutions differing tenfold, the mean m_1 in the 10^{-5} dilution, to be directly comparable with the mean m_2 in the 10^{-6} dilution, is multiplied by 10 and has a standard error of $\sqrt{(10\sqrt{m_1})^2/10n}=\sqrt{5m_1}$. It can be shown that the smallest significant difference for the most disadvantageous values of m_1 and m_2 is about 90, and that all differences greater than this yield t greater than 9·925. In dilutions differing by 100 fold—e.g., C2 and C4—the counts are always significantly different.

TABLE VI

Dilution	Count			
	C1	C2	C3	C4
10^{-5}	+ + +	+ + +	+ + +	12
10^{-6}	About 30	+ + +	5	1
10^{-7}	3	25	0	0

Specimens counts made by the "surface-viable" method. Colonies developing from 0·02 c.cm. of dilution. + + + indicates confluent growth in the drop area.

In each test four graded inocula of an organism were inoculated with 5 c.cm. samples of urine and viable counts made before and after 24 hours' incubation. The results were recorded on a logarithmic scale as in Fig. 1. Here unit changes in the scale indicate changes in the *ratio* of one count to another. Now the ratios of the theoretically possible, significantly different count values in adjacent tenfold dilutions range from 20 downward, so that a ratio of 20 or more between the initial and final counts is significant of the multiplication or death of the inoculum. This corresponds to a rise or drop of 1·3 in the logarithm of the counts. To increase the stringency of the criterion and allow for the errors of counting technique the ratio 50, corresponding to a change in logarithm of 1·7, has been adopted as the lower limit of significant difference between the logarithm of two counts. This figure is applicable to inocula of any size, for the ratio of any two counts is independent of the multiplication of count values by dilution factors.

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INTRODUCTION OF THE SMITH-PETERSEN PIN IN TREATMENT OF INTRACAPSULAR FRACTURES OF THE NECK OF THE FEMUR

By K H Pridie, M B Lond, F R C S Eng
ASSISTANT ORTHOPÆDIC SURGEON IN CHARGE OF THE BRISTOL ROYAL INFIRMARY FRACTURE CLINIC

It has been proved that the introduction of the Smith-Petersen pin is the ideal procedure in cases of intracapsular fractures of the neck of the femur Union is more certain and the recovery more comfortable to the patient than with the older method of the Whitman's plaster English fracture surgeons are not satisfied with the Whitman's plaster, which is an expensive method of treatment Hospital beds are occupied for many months by patients in plaster, and the nursing is difficult because they require skilled attention A successfully introduced pin removes all the complications of nursing, the stay in hospital is greatly shortened, and the functional result is excellent

Such workers as Mr Watson Jones of Liverpool have shown how the operation can be used in even the aged, with very successful results The open operation, however, is a difficult one and can be undertaken only by experts Mr H A Brittain and Mr Eric Lloyd in England and Mr Thomas King of Australia have done much to popularise the blind technique About a year ago Mr Hey Groves designed a very simple form of introducer, which will place a Smith Petersen pin with mathematical accuracy (see Fig 1) The whole operation takes eight minutes, with a minimum of shock to the patient and with great ease to the surgeon. So slight is the operative risk that now one can divide the cases of intracapsular fractures into two classes —

1 Those in which no treatment at all is possible, because the patient is so old and frail that he will die whatever is done

2 Those in which the closed pinning operation is the method of choice

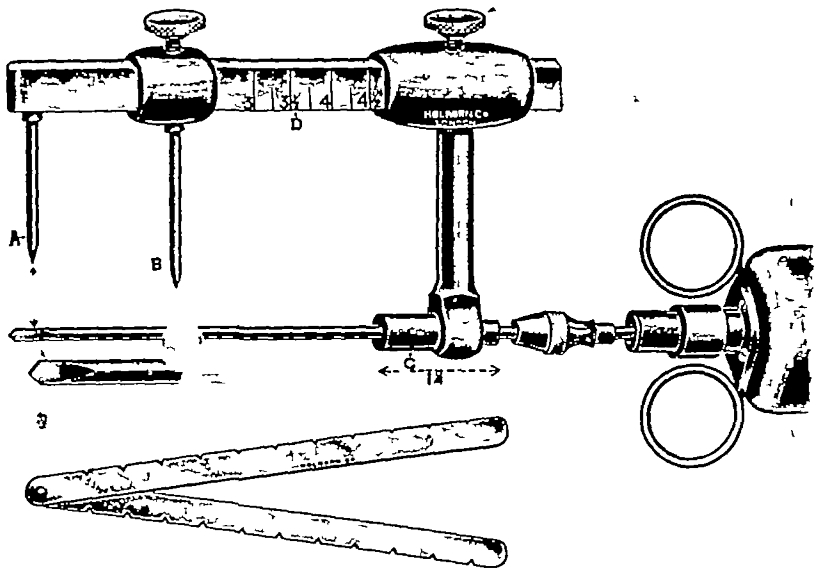

FIG 1 —The Hey Groves introducer as modified by the author

In old age the neck of the femur, together with the rest of the bones, becomes decalcified and even a slight fall is sufficient to cause a fracture of this type The left side, curiously enough, seems to be fractured more often than the right

Where the general condition is very poor, it is advisable to reduce the fracture under local anæsthetic or gas and put the limb up in the Hamilton Russell position with traction for a week If complications such as hypostatic pneumonia or mental changes are going to develop, they usually do so in the first week, and the limb is relatively comfortable when the fracture has been reduced and traction applied As soon as symptoms due to the shock of the accident have subsided and the general condition is good, the operation is performed. In patients whose general condition is good the reduction and the operation can be performed at the same time

REDUCTION

The blind method can be applied only in cases where perfect reduction can be obtained. It is no use to attempt the pinning operation on an unreduced fracture If the fracture has been reduced the pinning operation is very simple Therefore this operation depends on the ability of the surgeon to reduce the fracture completely In the past year in 37 cases I have been unable to reduce the fracture in 1 case only, this was a subcapital fracture and I found at the post mortem that the fractured surface of the head of the femur had rotated and was looking forwards and slightly inwards Only open operation would have reduced it As the patient was 85 and very frail, this was out of the question

Anæsthesia for reduction (local) —Novocain (20 c cm of a 2 per cent solution) is introduced into the capsule of the hip joint through a long thin needle After ten minutes the limb loses its pain and spasm and the fracture can be reduced

Description of reduction of left intracapsular fracture An assistant applies traction to the limb while it is still in external rotation, until the length as measured with a tape measure is the same on both legs A roller towel is placed round the femur in

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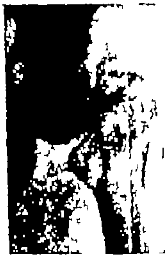
FIGS. 2



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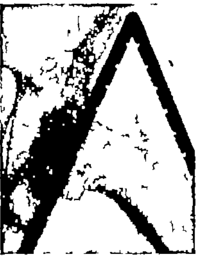

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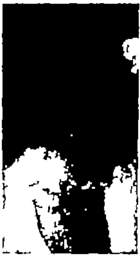

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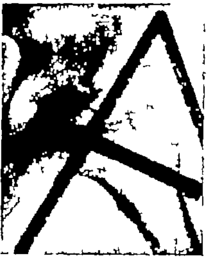


FIG 2.—Typical intracapsular fracture of the neck of the femur before reduction There is eversion of the distal fragment and the lesser trochanter is raised above the tuber ischii indicating shortening of about 1 in

FIG 3 —Lateral view of same fracture.

FIG 4.—Antero posterior view of same fracture after reduction with the measured gauge in position The centre of the head is opposite notch 6 on the gauge and the centre of the base of the shaft is on a line joining notches 6 and 8

FIG 5.—Lateral view following reduction

FIG 6.—Antero-posterior view with pin in position

the groin and another assistant pulls steadily in a lateral direction The operator then grasps the limb by the ankle with the left hand and under the knee with his right hand bends the knee and internally rotates the limb to the fullest extent. During this manœuvre the thigh should be flexed and not hyper extended. Pressure is then applied over the anterior aspect of the neck of the femur with the thumb Perfect hair line reduction can be obtained in every case of transcervical fracture by this method and most cases of subcapital fracture can also be reduced in this way

OPERATION

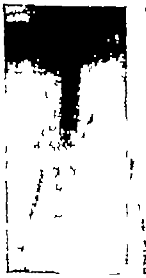
After premedication with scopolamine and morphia the patient is placed on an orthopædic table I use a Shropshire horse with a lignum vitæ pelvic rest, so that antero posterior and lateral radiograms can be taken without hindrance The limb after reduction is held by an assistant so that the knee is slightly bent and the patella facing directly upwards The leg should be in a position of 20° abduction and slight traction kept on it Mechanical traction is apt to overpull the fracture and produce coxa valga.

The thin metal gauge is strapped to the limb the apex of the angle situated ½ in. from the anterior superior iliac spine, with one limb following the anterior crease of the groin and the second limb lying down the axis of the shaft of the femur It is strapped into position with zinc oxide adhesive tape Antero posterior and lateral radiograms are now taken to show if reduction is perfect. During the wait of five minutes necessary for the development of the radiograms, the region is painted with iodine including strapping and guide The towels are placed in position and the administration of gas and-oxygen is begun.

The antero posterior radiogram will show the gauge superimposed upon it (Fig 4) This picture shows the relationship of the centre of the head of the femur and the centre of the base of the neck to the measured gauge. In Fig 4 for instance the centre of the head of the femur is opposite notch 6 and the centre of the base of the neck is opposite notch 8

The spike marked A is introduced vertically downwards through a small puncture wound made in the skin ½ in. medial to notch 6 on the measuring gauge The course of the femoral artery must have been previously localised however for failure to observe this precaution might conceivably lead to the disaster of puncturing this vessel It can easily be felt with

FIGS 7



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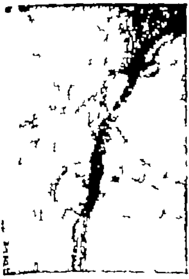

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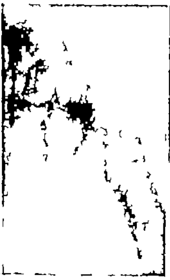

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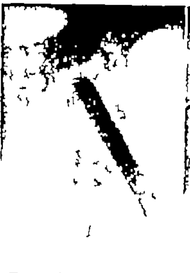

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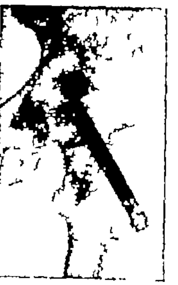

FIG 7.—Lateral view with pin in position

FIG 8.—The femoral artery injected showing its relationship to the head of the femur

FIG 9 —A typical intracapsular fracture of the neck of the femur before reduction

FIG 10.—The same case as (9) after reduction and operation.

FIG 11.—The same case as (9) and (10) two and a half months later showing firm bony union.

the finger in this region and the spike A placed just external to it. In a dissection it appears to pierce the anterior crural nerve, but I have never found any harm arise from this.

The spike B is introduced on the line joining notch 6 and notch 8, 1 in. inside notch 8 in Fig. 4. In this case the marked gauge has been placed with the vertical limb not in the long axis of the femur, which makes the estimation of the position more difficult. The two spikes A and B are pushed down till they rest hard against the bone and the introducer is then steadied by an assistant who keeps it pressed in position during the introduction of the drill guide.

The guide director marked C is now placed in position. This marks the site of the skin incision. A 1½ in. incision is made on the lateral aspect of the shaft of the femur going down to the muscle, but the muscle is not divided. If the muscle is cut, a branch of the external circumflex artery will cause trouble, for it is deep and difficult to ligature. The guide director is then placed in the incision up against the lateral aspect of the shaft of the femur and the required length of pin is read from the calibration along the horizontal bar of the instrument. A high tensile steel guide 7 in. long with a spear shaped cutting point is then introduced through the director C, by means of an electric drill.

Mr Hey Groves, in his original operation, introduced the guide through the skin by hand, but where the bone is in good condition and not decalcified, it can deflect the guide, causing it to pass anterior to the femur. The manual efforts to pierce the bone often bent the guide and I therefore now make an incision and place the guide director C up against the lateral aspect of the femur and use a high speed electric drill to introduce the guide.

The guide is 7 in. long and when the chuck of the drill is opposite the end of the crossbar D, the point of the guide is immediately under the spike going down to the head of the femur (marked A).

A Pridie Watson pin of the correct length is then threaded on to the guide, and driven home by means of a Stiles punch. I do not use the triflange nail starter to pierce the cortical bone, as the fins of this instrument are too big and tend to cause loosening of the pin. If this instrument is used, there is danger of the pin slipping out. I have had no trouble with pins slipping when they are driven home without the use of the nail-starter punch.

Position of pin.—The pin should be low. The cortical bone over the great trochanter is thin and a pin placed high tends to slip out. If the pin is placed low and obliquely, the cortical bone is thicker and the pin has a firm hold. In subcapital fractures it is important that the pin should get as good a grip as possible on the head without piercing the cortical bone of the head.

By means of the pneumatic hammer and using a pressure of 100 lb. per sq. in., it is possible so to regulate the drive on the pin that the pin will only pass through cancellous bone and will not pierce cortical bone. In this way the pin can be pushed to the furthest extremity possible without fear of arthrodesing the hip. Using a pneumatic hammer there is no disimpaction of the fracture fragments as the pin passes through the distal to the proximal fragment. The impactor need not be used afterwards. This instrument bruises the muscle and injures the bone, causing a rarefying osteitis around the entrance of the pin. This tends to loosen the pin, causing it to slip out.

RESULTS

Using this method in 36 cases, I have been able to secure perfect reduction and a correct position of the pin, the operation never taking more than eight minutes. No ligatures are needed, the operation is very simple, and the patient suffers no shock or after pain.

As this operation has proved satisfactory with intracapsular fractures, I have tried it in 3 cases of extracapsular fractures. The advantages were the same: (1) the patients stayed in hospital only a fortnight, (2) no splinting was required and movements could be started early, and (3) there was less risk of coxa vara, and weight-bearing could begin early. This method can only be used, however, where the great trochanter, and the bone immediately below it, is still intact with the rest of the femur. If the great trochanter is also shattered the operation is of no value.

The difference between intracapsular and extracapsular fracture can usually be told at a glance. When the fracture is intracapsular, the leg is only partly rotated externally, and there is little shortening. When the fracture is extracapsular, however, the limb is completely rotated outwardly, there is more shortening, and also bruising over the outer surface of the thigh.

The subcapital fracture is still a problem which has not been solved except by the open operation. The results of the pinning of subcapital fractures are not as satisfactory as those of the transcervical fracture. The fragment of the head is often so small that the triflange pin does not get sufficient hold to prevent eversion and reopening of the fracture.

I have described this method—perhaps rather prematurely—in order that others may benefit by this very simple procedure. Intracapsular fractures are no longer the great problem they used to be; in fact, they have become one of the simplest and most satisfactory forms of fracture to treat.

My thanks are due to Mr Hey Groves, the inventor of the introducer.

PAGET'S DISEASE

WITH MENTAL SYMPTOMS AND CHOROIDITIS

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The case here recorded was admitted to the South Yorkshire Mental Hospital on March 6th, 1936. In addition to the mental condition which had given rise to certification, the patient presented all the typical signs and symptoms of advanced Paget's disease (osteitis deformans). Changes of the fundi were also found—namely, widespread disturbances in the distribution of the choroidal pigment. This condition, which has been recorded previously in a certain number of cases of this disease, was investigated by Mr Gordon Mackie, visiting ophthalmologist to the hospital, and a full account of it will shortly be published by him elsewhere.

DESCRIPTION OF CASE

The patient was a man aged 64, and he was admitted in a state of acute confusion.

History.—Ten years previously he had begun to complain of backache, and this had continued ever since. Four years later aching in the legs developed and this was followed after a year by the development of kyphosis At this time he noticed that he was requiring larger sized hats and boots, and glasses for reading Three years later shortness of breath developed and he had pain in the occipital region when lying with his head on a pillow His sight gradually became much worse so that he could scarcely discern objects held near to him

For four months before admission he had been confined to bed because of general weakness difficulty in getting about and shortness of breath The first indication of mental abnormality was an increasing restlessness which began after he had been confined to bed for three and a half months. This lasted for three days, then he suddenly became acutely confused On being visited by his son on the evening of this change he said Are you a man from the garage ? whereas he had been conversing quite rationally with him in the afternoon He became very noisy demanding to be sent home (he was still in his own house) answered imaginary voices, and had visual hallucinations of people standing at the foot of his bed He became unmanageable at home and had to be transferred to hospital. He had not had any previous mental illness and there was no evidence of a psychopathic heredity

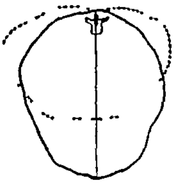

FIG 1.—Cyrtometer tracing of patient s chest (Dotted line = normal tracing)

Clinical findings on admission —The cranium was much enlarged, the head length being 210 mm head breadth 178 mm. head height 145 mm. (normal average for the district 194 mm 150 mm and 130 mm respectively) The facial bones were normal in size The clavicles sternum and ribs were enlarged and thickened and kyphosis was conspicuous The effect of the changes on the shape of the chest is best shown by the cyrtometer tracing (Fig 1) This was taken at the level of the 9th dorsal spine and is accompanied by a tracing taken from a normal subject at the same level. All the bones of the pelvis arms, hands legs, and feet were enlarged and in the case of the long bones there was exaggeration of their normal bowing (Fig 2)

Radiograms of the bones involved showed typical changes involving almost every part These consisted of varying degrees of coarsening of the bone structure loss of normal outlines with a ground glass appearance of the surfaces and in the case of the skull amorphous deposits which gave a cotton wool effect The heart was enlarged and fibrillating with a systolic murmur at the apex and accentuation of the pulmonary second sound. The systolic blood pressure was 160 mm and the diastolic 80 mm. All palpable arteries were tortuous and thickened. Nothing abnormal was found in the alimentary and respiratory system or in the central nervous system apart from the changes in the fundi which are described below Repeated attempts were made to obtain a specimen of the cerebro-spinal fluid but all were unsuccessful owing to the bony changes in the vertebræ.

Condition of the eyes (Mr Mackie s report) —The ophthalmic condition is known from November 1932 until the time of death At the earlier date one eye showed choroidal atrophy with pigment round the disc, whereas the left showed early pigment changes only Later records show progress of the condition till the terminal state was one of widespread fine pigmentation with larger aggregations of pigment in the central areas, a hæmorrhage in one eye and a well-developed milky pellicle the whole picture being one of severe retinal degeneration with fibrinous exudate somewhat resembling the senile type of choroido retinal degeneration There was no optic atrophy or motor nerve damage of the type that is attributed to pressure from changes in the skull bones (A full account of the case together with the results of microscopical examination of sections has been submitted for publication elsewhere)

Laboratory findings —Blood Wassermann negative Urine normal. Blood calcium 11 5 mg per 100 c.cm Blood phosphorus 4 mg per 100 c cm Serum phosphatase 20 units. Non protein nitrogen 35 mg per 100 c.cm Blood cholesterol 130 mg per 100 c cm. Blood count red cells 3,400 000 ; hæmoglobin 80 per cent ; colour index, 1 1 ; white cells 4200 (polymorphs 65 per cent lymphocytes 33 per cent large hyalines 2 per cent) no abnormal red cells Thus apart from the slight anæmia and the definite increase in the blood phosphatase the laboratory findings were within normal limits

Mental symptoms —He was disorientated to time and place amnesic and irrelevant in conversation He was very restless especially at night difficult to keep in bed and incontinent of urine and fæces He had visual and auditory hallucinations, both of which could be increased by suggestion

Course of illness —He remained in a state of confusion for eleven weeks and then suddenly became quite clear again, without any gradual transition as is usually found in cases of confusion There was no residual dementia and he remained mentally normal although confined to bed for physical reasons until Sept 7th 1936 when he had an attack of acute heart failure and died

Autopsy (Sept 9th) —The following visceral changes were found : Lungs : congestion of right and left lower lobes. Heart : enlargement of all chambers ; narrowing of mitral ring with abundant calcareous vegetations at the valve margins similar deposits on the aortic valve cusps, coronary arteries sclerosed but patent first part of aorta atheromatous Kidney and spleen : normal. Cranium and contents dura mater normal pia-arachnoid milky cerebro-spinal fluid increased in amount over the cortex the latter showing slight general atrophy but being otherwise normal

Apart from slight dilatation of the lateral ventricles and calcareous deposits in the choroid plexuses there were no other macroscopical abnormalities In view of the wide spread arterio-sclerosis in the rest of the body the healthy condition of the basal arteries was particularly noticeable Both cerebellar fossæ were deeper than usual presenting

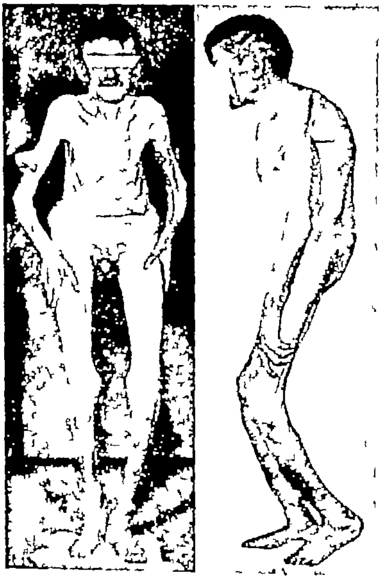

FIG 2 —Photographs of the patient to show enlargement and bowing of long bones.

the appearance of "slipping down the neck." Subsequent histological examination of a portion of the frontal cortex did not reveal any abnormal changes

LITERATURE

When first described by Paget (1876) osteitis deformans was not considered to be associated with any mental changes The original article states that "even when the skull is largely thickened and all its bones exceedingly altered in structure, the mind remains unaffected" However, one case was mentioned in which there were attacks of "vertigo" supposed to be due to the thickening of the ribs, causing fixation of the chest wall, which in turn had led to engorgement of the venous system. Since then mental symptoms in cases of Paget's disease have been described from time to time, but adequate statistics are not available to show the relative frequency of the association. Thus whilst Schrijver (1932) says that it is very common, Hartfall (1931) found no evidence of mental abnormality in the records of 18 patients suffering from Paget's disease admitted to the Leeds General Infirmary during two years Cases in which this association has occurred have been described by Hann (1910), Stander (1933), Schrijver, Smith (1928), V Eeden (1928), Kaufman (1929), Hartfall (1931), and Rutherfurd (1931)

In *Hann's* case that of a female aged 63, the picture was one of gradual mental deterioration with loss of initiative and emotional apathy Three seizures occurred in the course of the illness, but only one of these was under medical observation and consisted of coma lasting for two days and terminating in death

Stander described two cases First a male aged 56, who after suffering from the typical bony changes for sixteen years became indifferent to his business affairs, defective in judgment, and showed impairment of memory His speech and writing were both retarded and he had occasional attacks of giddiness Periods of acute mental confusion occurred from time to time The second was a male aged 66, who became mentally confused, disorientated to time and place, restless, and irritable, and had acute visual hallucinations which could be modified by suggestion His memory was grossly impaired and there was sensory aphasia

Schrijver described four cases The first of them showed a mental picture of delusional insanity with auditory hallucinations There was some stereotypy of conduct suggesting schizophrenia, and occasional epileptiform seizures occurred The family history showed a psychopathic tendency The second was an imbecile with osteitis deformans who became depressed at the age of 56, refused food, and showed suicidal tendencies Recovery from the psychotic symptoms occurred The next was a male aged 81, who after showing bone changes for several years had three attacks of mental trouble The first lasted only a few days and resembled Korsakow's *syndrome—i e , disorientation to time* and place with confabulation He was also very restless This cleared up, but a relapse occurred six months later when the same symptoms were repeated This second attack also ended in recovery One month later he broke down again into a stuporose and hallucinated state from which he recovered after two months Between these attacks no evidence of dementia was obtainable The last case was a male aged 65 who showed radiographic evidence of Paget's disease and also had marked arterio sclerosis The mental symptoms resembled those of an arteriopathic psychosis consisting of emotional instability, forgetfulness depression, and paranoid tendencies Ultimately he had a stroke and developed parkinsonian symptoms

Smith has reported two cases but in the first of these the bone changes merely supervened on a psychosis which has been present for fifty years so that no ætiological association was likely between the two In the second case however the mental succeeded the bony changes and were attributed to them They consisted in attacks of giddiness over a period of years, and then the sudden onset of acute mental confusion which lasted three weeks, during which she had both visual and auditory hallucinations and tended to confabulate

Van Eeden described a case in which the bony changes were limited to the skull The patient, a female aged 58 years had suffered from "dizzy" attacks for eleven years Then headaches developed, also muscular asynergy, so that she was unable to either walk or sit up, and had incontinence of both urine and fæces The mental symptoms were again of the Korsakow type, with loss of memory for both recent and past events, and increased suggestibility She was quite unconcerned about her condition, almost euphoric, and comprehended well, although her powers of concentration were easily fatigued During the illness she had one period of three weeks in which her memory showed much improvement, but she eventually relapsed into her former state

Kaufman described four cases, in all of which the bony changes preceded the mental The first two presented symptoms of organic dementia accompanied by headaches and dizzy attacks, and in one of them there was also impairment of speech and of the movements of one hand His third case, after a history of bone changes for fifteen years, developed paranoid symptoms, mainly directed against her husband The fourth was merely one of the association of Paget's disease with another lesion, as a cerebral tumour was discovered at autopsy

Hartfall has reported a case in which Paget's disease was associated with depression, hypochondriacal delusions, and suicidal tendencies, and similar hypochondriacal delusions were present in the case described by *Rutherfurd*

DISCUSSION

In 13 of the 16 cases reviewed above it is possible that the bony and mental changes were in some way related to each other ætiologically, the remaining 3 being merely cases of Paget's disease in which mental symptoms occurred as the result of a superimposed lesion of independent pathology All of these 13 patients were over fifty years of age, and the mental picture was always of a type normally associated with an involutional or senile psychosis This lends support to the theory that mental symptoms in Paget's disease are the result of arterio sclerosis In the present case, however, although there was widespread arterial degeneration all over the body, the cerebral arteries were healthy, and the slight degree of cortical atrophy present was nothing more than what is usually found at his age Van Eeden postulated that the mental symptoms in his case were due to compression of the brain from diminution of the cranial capacity, but Wyllie (1923) has shown that although the cranial capacity becomes diminished vertically it is actually increased antero posteriorly In the present case the presence of increased intracranial pressure could not be excluded as a specimen of the cerebro spinal fluid was not obtainable but there were no suggestive symptoms, such as vomiting or optic neuritis However, the deepening of the posterior fossa, as described in this case and in the literature, is bound to have some effect on the minute structure of the brain, subjecting its fibres to unusual strains and stresses Is it possible that this factor explains the occurrence of mental symptoms in some cases of Paget's disease? A specially interesting feature of the case described here was the suddenness of both the onset and termination of the confusion.

Such conditions usually both begin and end gradually, and relapses are frequent, but here the patient passed from complete clouding of consciousness to mental clarity in a day, and, judging by the history, the onset had been similarly dramatic Another unusual feature was the fact that there was no evidence of residual dementia

I wish to thank Dr A Pool medical superintendent of the West Riding Mental Hospital Wadsley for permission to publish this case and Sir Arthur Hall consulting physician to the hospital for his valuable advice and assistance

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INDUCED EPILEPTIFORM ATTACKS AS A TREATMENT OF SCHIZOPHRENIA

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PSYCHIATRISTS have long recognised that in certain mental disorders improvement sometimes follows "shocks In 19[illegible] Nyirö and Jablonsky reviewing the reports of the Budapest Lipótmezo Mental Hospital observed that in a number of schizophrenics remissions had followed attacks of epilepsy In 1930 Müller reported two cases of catatonic schizophrenia which recovered after having epileptiform fits. These observations and the results of his own experiments prompted von Meduna (1934) to evolve a form of treatment by inducing fits artificially

He first tried intramuscular injections of camphor in oil but these had to be discontinued because of the large dose required Eventually pentamethylentetrazol known as Cardiazol (Knoll) proved to be more practical and effective * He has since treated a large number of recent as well as chronic cases of all forms of schizophrenia irrespective of antecedents with very good results No fatality, complications or late sequelæ were observed. His conclusions are that the best results are obtained in early cases with 6–12 months of psychosis and in those that responded with strong fits to the minimum dose of cardiazol. A thorough physical examination is essential before treatment: it must include complete examination of urine and estimates of blood sedimentation rate blood urea blood-sugar and blood pressure All febrile conditions and pulmonary cardiovascular and renal diseases are absolute contra indications

The technique is simple All previous medication especially of sedatives should be discontinued for a few days beforehand. Cardiazol is supplied in ampoules of 1 1 c cm solution each containing 0 1 g of cardiazol in 1 c cm. It is injected intravenously once or twice a week with at least two clear days between each injection The patient having had an enema the previous evening and no morning meal is kept in bed and injected at 8 A.M The initial dose should be 0 5 g of cardiazol and if this dose does not produce a fit it should be increased at the following injection by 0 1 g until the fit-producing dose is reached. This is then repeated at subsequent injections The highest dose reported is 1 g The fit occurs ½–1 minute after the injection lasts for about 2 minutes and has all the dramatic appearance of a grand mal attack. At the onset of the fit the tongue should be protected by placing a wooden wedge between the jaws. The patient remains dazed afterwards for a short time and restlessness may follow but this is temporary and should not be controlled by sedatives More often the patient falls asleep and he should remain in bed for the rest of the day Food should not be given for 4–5 hours after the fit because there may be vomiting No other complications have been met with. The number of fits required varies considerably the average however being 30 Remissions have been obtained with as few as 4 but in general if no mental change is noticed after 20 fits the treatment is stopped

Epileptiform fits occur in hypoglycæmic coma during treatment with high doses of insulin and although dangerous to life because of the status epilepticus that may set in they are generally believed to have a beneficial effect on the mental condition James Freudenberg and Cannon (1937) report that they have induced occasional epileptiform fits by injecting cardiazol into some of their patients undergoing high dosage insulin treatment on days when insulin is omitted; for the cardiazol fits are less dangerous than those of hypoglycæmia and may be used as a supplement

Induced epileptiform fits either alone or in combination with insulin coma, have been used at the Three Counties Hospital for several months with fairly good results. Although no imposing figures of recoveries can yet be produced and the treatment is very active and somewhat rough, no ill effects have been observed in carefully selected healthy young patients. The method appears especially beneficial in early psychoses especially the stuporose and catatonic

I am indebted to Dr N McDiarmid medical superintendent of Three Counties Hospital for permission to carry out this treatment and to publish this paper

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* Cardiazol is a rapidly acting circulatory and respiratory stimulant It has come to be used in the convulsion therapy because in sufficiently high doses it excites the central nervous system and as it contains no paralysing component it induces convulsions with safety

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CONVULSIVE THERAPY IN SCHIZOPHRENIA

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SINCE 1934 von Meduna of Budapest has been treating cases of schizophrenia by the administration of convulsive drugs He believes that there is a biological antagonism between schizophrenia and epilepsy and that the production of major convulsions can cause remissions. In a series of 110 patients he has secured remissions in 54 cases whose duration varied from less than six months to more than five years. Experience of the so-called insulin shock treatment of schizophrenia has shown that the hypoglycæmic convulsion is therapeutically useful and it is reasonable to suggest that any major fit however caused will have a good effect

METHOD

At first Meduna used camphor by intramuscular injection but he later found the proprietary drug Cardiazol more suitable for the production of fits In small doses this drug is a respiratory and circulatory stimulant, its chemical name being pentamethylentetrazol (It is also known in the United States as Metrazol) The solution that I have used is of 10 per cent strength, and is prepared according to the following formula cardiazol powder 1 0, di sodium phosphate 0 01, distilled water ad 10 0 The solution may be sterilised by heating for thirty minutes in a water bath at 100° C The solution is best prepared daily

The patient is in bed, and the stomach should be empty The initial dose is 0 5 g cardiazol powder in solution—i.e , 5 c cm of the 10 per cent solution The injection is made into the veins at the elbow, and I use a needle of 0 90 mm diameter The epileptic fit comes on almost instantaneously, often with a premonitory cough Usually the convulsion is a typical major epileptic fit, but I have seen fits composed of tonic spasm only, and also mental convulsions in the form of furor The only attention necessary during the fit is to restrain violence, and to insert a soft tampon between the jaws, which never fail to open and allow time for this procedure It is essential that the injection be made quickly, and Meduna advises a rate of 1 c cm per second In the same patient I have injected 9 c cm slowly and failed to produce a fit, whereas the next day the rapid injection of 5 c cm at once resulted in a convulsion If the initial dose of 5 c cm does not produce a convulsion, the dose is increased next day by 1 c cm and so on. However, with increased skill it is usual to find that 5 c cm suffices with most patients As the solution is somewhat irritating care must be taken to make sure that the needle is truly within the vein

After the fit the patient may or may not have a short period of coma , in any case rest in bed for some five hours is advisable Mental improvement may occur after two or three fits, or may be delayed until some 15–20 fits have been produced Meduna advises that the treatment be continued until 20 fits have been produced, whether there is improvement or not

ILLUSTRATIVE CASE

A woman, aged 33, was admitted to hospital on April 19th, 1935 She had become depressed a few days after the death of her father, which took place some three weeks before admission Her sister had been a patient in the hospital on two occasions

On admission the patient was in a state of resistive stupor, which persisted until September, 1935, when she began to talk Her utterances were nonsensical and have continued thus A mental examination on Feb 9th, 1937, showed no apparent dementia She understood questions, and so far as her incoherent state allowed she was coöperative and her responses usually contained the correct answer However, usually she spoke nonsense, and made use of neologisms In answer to the question, ' What is your name ? " she replied, "The Holy Martyr of the world They forged my name Ki nacki ki nooki ki nacki Miracles of the blessing of the pure air They said, holy ki nacki ki teeren, they said You can understand what I'm saying " The principal clinical features were the absurd incoherence, the silly smiles and grimaces, and the general religious tone of her utterances She was also aurally hallucinated

From Feb 10th 1937, until April 23rd she was treated by Sakel's hypoglycæmic method Neither during nor after her ten weeks of this treatment did she show any improvement mentally The insulin treatment was directed to the production of daily periods of coma, and once she had a major hypoglycæmic convulsion

On May 22nd the cardiazol treatment was begun, and after the second induced convulsion mental improvement was noticed. She no longer uttered the nonsensical phrases described above, and it was possible to hold a sensible conversation with her In addition her hallucinations diminished markedly However she was still apathetic Up to the present she has had only 7 fits induced and further improvement is at least likely Even though this improvement should disappear, the case is still of interest as showing the effect exerted by the cardiazol fit on schizophrenic insanity

POSSIBLE ILL EFFECTS

Meduna believes that the convulsions alter the humoral environment so that it becomes unfavourable for the development of schizophrenia These views, however, are still speculative, and it may later be found that the good effects are solely due to a non specific stimulation of cerebral cells that had become functionally inactive

In a series of 1000 induced convulsions Meduna has seen no serious complications He quotes the results of renal and electrocardiographic investigations as follows ' the cardiazol convulsions exert no deleterious and certainly no permanent influence on a healthy system, particularly not on the circulatory system " In my own short experience of some 60 induced convulsions, the only ill effects seen have been slight and short lived attacks of vomiting, transient attacks of moderate tachycardia, and the occasional thrombosis of the injected veins In the present state of our knowledge, however, it would be in the highest degree unwise to apply this treatment to any patient who showed signs of organic disease With these provisos, it may be said that the cardiazol convulsion is no more dangerous than the idiopathic epileptic fit

For permission to publish this report I am indebted to Dr J Harvey Cuthbert, medical superintendent of West Ham Mental Hospital For a translation of Meduna's book I am indebted to Knoll Ltd of Welbeck street

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A PENETRATING STAB WOUND OF THE HEART

OPERATION, RECOVERY

By William Gissane, Ch.M. Sydney,
F R C S Eng and Edin
SENIOR ASSISTANT MEDICAL OFFICER AT ST JAMES HOSPITAL, LONDON AND
Bodo Schulenburg, M B Cape Town,
F R C S Eng
FORMERLY ASSISTANT MEDICAL OFFICER AT THE HOSPITAL

Since Rehn published his original case of a successful operation on a stab wound of the heart in 1897 many such injuries have been reported. Yet, in this country, the injury is still an extremely rare one , the habits of our countrymen have not changed since Guthrie wrote in 1848 "London, the great metropolis of the British Empire, with its two millions of inhabitants, has been nearly exempt from injuries of the heart—sensible people not being disposed to stab each other, whilst madmen try to kill themselves in a different way "

The report of a case with its radiological and electrocardiographic records appear to be of interest

A man, aged 23, was stabbed in a fight on July 31st, 1936 He collapsed ' through inability to get his breath ' and was unconscious for a short period Seen by one of us twenty minutes after the injury he was then quite conscious but in a state of collapse He was pale, cyanosed, sweating and dyspnœic; he had vomited once. He complained of pain over the heart. There was no dilatation of the veins of the neck. *On examination* the pulse was feeble and the rate 120. A small stab wound ¾ in. long was seen over the 7th left costal cartilage 2 in. from the mid line; and the clothes were saturated with dark blood oozing from this wound. By percussion no increase in cardiac dullness was detected—the absence of this sign was confirmed by three examiners. The heart sounds were audible but muffled. In the *abdomen* there was rigidity of the upper left rectus. Diagnosis: perforated wound of the heart. He was given morphia gr ¼. Re-examined just before operation (40 minutes later) the patient's condition had improved considerably and he spoke cheerfully. The pain over the heart though still present was not so bad. His colour still pale but now not cyanosed; he was less dyspnœic. Pulse still feeble rate 120. Heart: no increase of cardiac dullness detected clinically. Sounds audible but still muffled. The stab wound was not bleeding. We were now less certain of our diagnosis.

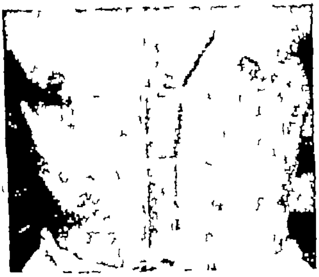

FIG 1.—The incision

Operation.—The wound was first excised and extended downwards slightly. After retraction of the skin edges, our impression was that the peritoneal cavity had been opened by the injury; accordingly the incision was extended downwards and the peritoneal cavity exposed, but this was clean. Carrying the incision vertically upwards the 4th, 5th and 6th costal cartilages were divided near the sternum (see Fig 1). Tuffier's rib spreader was introduced and the internal mammary artery tied. The pleura was now pushed away and after mopping up the blood the pericardium was seen with a small perforated wound. The pericardium was next opened widely and found to be full of blood. Nothing could be seen of the heart in spite of the use of a sucker to clear the field of blood. A hand was passed inside the pericardium and under the heart which was gently levered upwards into the wound. This manipulation had no apparent effect on the heart's action. Now the wound on the anterior surface of the right ventricle was seen; it was about ¾ in long vertical and situated approximately ¼ in to the right of the interventricular furrow and opposite the 4th costal cartilage. From this wound blood welled during diastole but there was no loss during systole. The apex suture was now passed but did not prove satisfactory as it soon cut out. Relying on the hand under the heart to steady the organ two control sutures were passed one at either end of the wound and their ends crossed but not tied. Holding the ends of the crossed sutures taut approximated the edges of the wound, prevented further loss of blood, and rendered the closure of the wound by interrupted thread 60 sutures easy. The sutures were passed and tied during diastole. After inspecting the suture line and noting that no blood escaped the control sutures were removed and the heart dropped back. To our dismay the pericardium was again seen to fill up with blood. The left hand was introduced into the pericardium and the index finger felt and entered into a second wound situated on the diaphragmatic surface of the right ventricle. By hooking this finger inside the cavity of the ventricle the heart was slowly delivered into the wound and with the right hand the two stay sutures were passed. These sutures were crossed and held as before and the finger removed. This wound was closed with four interrupted sutures passed and tied during diastole. The heart was dropped back and the pericardium sucked dry. No more bleeding was seen. No attempt was made to close the pericardium. The soft tissues were sutured and the skin closed around a tube drain in the open pericardium.

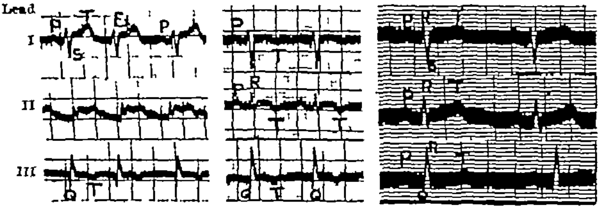

FIG 3.—Electrocardiograms taken two days, three weeks and five months after operation

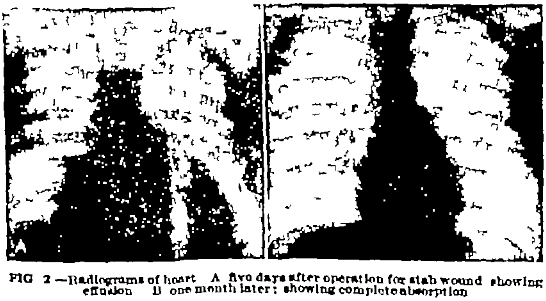

FIG 2.—Radiograms of heart. A, five days after operation for stab wound showing effusion. B, one month later; showing complete absorption.

Progress.—The patient's condition at the end of operation was fair. He was transfused with 400 c cm of blood given slowly. On the next day August 1st 4 oz. of blood-stained serum aspirated from drainage tube. Tube removed. Heart sounds of good volume clear and regular. Blood pressure 104/70 mm Hg. He complained of precordial pain and shortness of breath. On the third day he had a bad attack of precordial pain, dyspnœa, difficulty in swallowing and he was pale and cyanosed. At the level of the third interspace on the right side of the sternum a splashing sound was heard with the heart's beat. Blood pressure 110/80 mm Hg. Attack lasted 40 minutes and was relieved with morphia gr ¼. On the sixth day he got out of bed during the night; then realising where he was he returned to bed again after a walk of some 40 yards; no ill effect after this exercise. Stitches removed on the eighth day and the wound healed by first intention. By X ray the pericardial shadow is a large one but he had no symptoms. He was allowed out of bed on the twenty-eighth day and was discharged from hospital on Sept 9th able to walk and ascend stairs without discomfort. He was free from any symptoms. He is now at full hard manual work and without any symptoms

Serial radiograms showed at first a moderate pericardial effusion, as is seen in Fig 2 A, taken on the fifth day after operation, that the shadow was largely due to an effusion was more apparent on screening a few days later Fig 2 B taken within one month shows a complete absorption of the effusion Intermediate radiograms showed the stages in the absorption

Electrocardiograms —We also reproduce here two of the series of electrocardiograms, the first taken on the second day after operation and the final one taken five months later when the patient had returned to really hard work The report is by Dr Paul Wood "Fig 3 A shows sinus tachycardia, premature auricular ectopic beats, low voltage, right axis deviation, elevation of the R–T segment in leads I and II, and inversion of T3 with a moderate Q3 Fig 3 B is normal apart from axis deviation In lead III it should be noted that Q is less evident and that T is now upright Taking the series as a whole there are pronounced changes in the R–T components in all leads, but especially in lead II They are of the type which is characteristic of myocardial injury, but which has been described in association with pericardial effusion "

COMMENTS

Signs and symptoms —Our experience of stab wounds is limited in number We have operated upon only four cases in which a stab wound has been associated with the injury of some viscera In none of these has the skin wound given us help as to the direction the blade has taken In this case it was situated outside the surface markings of the heart The recovery of this patient during the 40 minutes preceding operation may have been due to an injection of morphia gr ¼, but it caused us to doubt our original diagnosis He still had precordial pain, dyspnœa, the pulse was weak and rapid, he was pale but not now cyanosed His wound had ceased to bleed. The clinical picture of tamponade of the heart was less obvious, yet at operation 1200 c cm of blood were collected from the pericardium before suture was begun We do not suggest that this amount of blood was compressing the heart before operation, but it does seem remarkable that the clinical signs were improving in spite of the presence of an excessive amount of blood in the pericardial cavity

Operation —The description of the operation may be difficult to follow if it is not understood that there were four coöperating hands during the procedures outlined. The heart's action was vigorous throughout and none of the manipulations had any apparent ill effect on its action During the operation we attempted to steady the heart and control bleeding by the grip recommended by Sauerbruch[1] The third finger of the left hand is passed along the transverse sinus and compressing the vena cava and pulmonary veins between this finger and the 4th and 5th fingers, and compressing the aorta and pulmonary artery between the finger in the transverse sinus and the index finger and thumb in front of the vessels We were not successful. We have since tried this grip during an operation for pulmonary embolism, through a more suitable exposure, but again without success, it appears to be a difficult manipulation We would condemn the control suture through the heart's apex When holding this suture the sensation of playing a lively fish at the end of a line, that might at any moment get away, was very real. In fact, this suture did cut out and the wound it made bled and required separate suture In suturing the heart at first a needle holder was used, but two needles broke and thereafter they were passed by hand The use of a needle holder is undoubtedly an error of technique when passing sutures in such a lively organ as the heart The omission to close the pericardium was intentional. The mortality and the incidence of infection have been higher in these cases in which the pericardium has been closed We recorded our dismay on finding the second wound in the right ventricle Had we kept in mind the situation of the skin wound we should have expected and been prepared for it

We have described our operative findings in detail because the case is an unusual one in this country Of the many recorded cases, a close follow up by X ray and electrocardiographic records is also unusual The details of this case will be published later by Dr Paul Wood.

Clinical and Laboratory Notes

ABORTUS FEVER TREATED WITH FOUADIN

By Freida Young, M.B Lond.

ASSISTANT PATHOLOGIST THE ROYAL HOSPITAL, WOLVERHAMPTON

Abortus fever is now generally recognised as a cause of prolonged pyrexia The actual incidence of the disease is difficult to ascertain as it is not compulsorily notifiable, but it appears to be rising Dalrymple Champneys[4] was able to trace only 5 cases occurring in this country in 1927, in 1932 he was able to obtain evidence of 57 In America similarly the incidence of the disease has increased rapidly

Numerous papers[1–3, 5–9] have appeared on the treatment of the disease, but as spontaneous remissions occur, it is hard to assess the value of the different methods employed Specific vaccines have been most widely used, particularly in America, and the results are said to have been good The reports seem to show, however, that such good results are obtained only when sufficient of the vaccine is administered to give rise to severe systemic symptoms Non specific vaccines, such as T.A B[2, 5, 6] sterile milk and toxic broth filtrates of the specific organism, have been used to produce "protein shock," but all have the disadvantage of requiring, to be effective, a general systemic reaction which is always inconvenient and may be dangerous

Various chemical agents have been tried[3] Neumann[7] has recently described the treatment of 8 cases with the drug Fouadin, an antimony preparation used in the treatment of bilharziasis He obtained good results in all cases Tanner[8] also has reported favourably on the use of fouadin in the treatment of one case The following is an account of treatment of a case with this drug followed by recovery —

A man aged 29, a bricklayer, was admitted to the Royal Hospital Wolverhampton, on Dec 7th, 1936, because of continued pyrexia There was a history of vague malaise for a month and a week before admission he had had rigors on each of two successive days, with fever every evening He had no other complaints No past illnesses nothing significant in the family history He was a well nourished well-developed young man, of toxic appearance Temperature 99° F, pulse 90 spleen just palpable no other physical abnormality found A blood count showed hæmoglobin 85 per cent red cells 4,780,000 per c.mm, colour index 0 89 white cells 5700 per c mm (polymorphonuclears 56 per cent, lymphocytes 38 per cent, monocytes 6 per cent)

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[1] Sauerbruch F (1925) Chirurgie der Brustorgane Berlin

The blood-serum agglutinated *Brucella abortus* suspensions in all dilutions up to and including 1 in 2500 He continued to have an evening temperature as shown in the accompanying Chart

On Dec 18th he was given his first injection of 1 5 c cm of fouadin two days later he received 3 5 c cm and thereafter he had 5 c cm on alternate days until a total of 45 c.cm had been given. By Dec 22nd his temperature had subsided and he had lost his toxic appearance He was discharged from hospital quite fit on Jan. 9th 1937 five weeks from the time of his first rigor He has remained apyrexial and in good health up to the time of writing (June 1937)

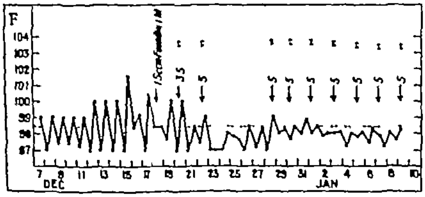

Chart showing course temperature after intramuscular doses of fouadin (1 5 c.cm. 3 5 c.cm. and 5 c.cm)

On Jan. 7th, 1937 three weeks after treatment began his serum agglutinated *Br abortus* suspensions up to a dilution of 1 in 500 On May 28th the titre was reduced to 1 in 50

So far the recorded results of undulant fever with fouadin have been encouraging further trial is justified.

I am indebted to Dr J H Sheldon senior physician to the Royal Hospital Wolverhampton for permission to publish the notes of this case and to Dr S C. Dyke, pathologist to the hospital for assistance and advice

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SEVERE STREPTOCOCCAL INFECTION TREATED WITH PRONTOSIL AND ANTISERUM

By O P Clark L R C S Edin.

The patient a healthy married woman of 37 mother of three children, all healthy was first seen at the house of her parents where she had arrived that morning for convalescence after three weeks in a municipal hospital. She gave a history subsequently confirmed by correspondence with the medical superintendent of the hospital that three weeks previously she had been admitted with an abortion at three months Dilatation and curettage was performed for this At no time whilst she was in the hospital had she run much of a temperature and she was completely apyrexial when discharged. On examination she was obviously very ill with a temperature of 104 F and pulse rate of 120 The uterus was enlarged and tender and thick pus was coming from the external os The left fallopian tube was readily palpable and tender

An intramuscular injection of Prontosil Soluble (5 c cm) was given together with 10 c cm of puerperal streptococcal serum (Parke Davis and Co) After 24 hours the patient showed no improvement and was accordingly removed to a nursing home where she was observed for a further period At the end of a further 24 hours her temperature had risen rather suddenly to 106° F and on examination signs of generalised peritonitis were evident Under a general anæsthetic through a median subumbilical incision the abdominal cavity was explored and was found to contain a large quantity of thin offensive pus The uterus and adnexa were acutely inflamed. There was no sign of a perforation of the uterus or of the vaginal fornices A large drainage tube was then inserted and the abdominal wound was closed Prontosil (25 c cm) was injected into the gluteal region whilst the patient was still under an anæsthetic On returning to bed she was in extremis with a temperature of 104 F ; pulse rate 124 Examination of the pus gave a pure culture of hæmolytic streptococci.

For the next few days there was free drainage from the tube and the patient ran a swinging temperature Pus became thicker and more offensive On the sixth day the temperature was 100° and the pulse-rate 104 Both temperature and pulse subsequently rose again rather suddenly to 103° and 116 respectively and signs of consolidation of the base of the right lung developed Expectorant mixtures were given and an electric hot pad was applied continuously to the right chest By the 14th day it was clear that the entire right base had solidified. The temperature continued to be hectic and the patient was still terribly ill During these 15 days she had received on an average 10 c.cm. of prontosil soluble intramuscularly each day On the 17th day she developed a typical scarlatinal rash and 20 c cm of antistreptococcal serum was given. Three days later (on the 20th day) free desquamation began and with it the temperature and pulse-rate fell. In the meantime the prontosil and antistreptococcal serum were administered each day A radiogram taken at this time showed complete consolidation of the right lower lobe In the course of the next few weeks pulse and temperature gradually settled down and the wound continued to discharge freely Up to the end of the fifth week the patient had received altogether 150 c.cm of prontosil and 60 c.cm. of antistreptococcal serum and apart from a rather rapid pulse at times appeared to be making progress

During the sixth week she suddenly developed thrombosis of the right axillary vein with moderate swelling of the right arm. At this time progress was such that it was considered safe to attempt the oral administration of Prontosil Album (sulphanilamide) Two tablets (each of 0 3 g) were given three times a day This was continued for some weeks the patient receiving in all a total of 150 tablets Progress was slow and uneventful and the patient was eventually sent home after 14 weeks in the nursing home Her temperature and pulse were normal and the abdominal wound was nearly closed. The right base was still completely dull to percussion and auscultation Pelvic examination was negative She began menstruating some weeks later

(1) It is clear from this case that in straightforward abortion even with proper institutional treatment, including dilatation and curettage the patient is not necessarily entirely out of danger and free from the possibility of a sudden recurrence of infection at the end of three weeks when she is normally discharged to her home.

(2) The case also shows that the rather unusual and alarming sequence of abortion pyometra, pyosalpinx generalised peritonitis, septic lobar pneumonia, septicæmia and septic thrombosis is not necessarily fatal.

(3) Administration of massive doses of prontosil, together with a suitable antiserum seemed to be of definite value as an adjunct to surgical drainage.

My acknowledgments are due to Mr Ralph Brooke who performed the operation.

Worthing Sussex.

MEDICAL SOCIETIES

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION

THE ninety-sixth annual meeting of this association took place at the County Buildings, Ayr, on July 7th, 8th, and 9th. Dr DOUGLAS McRAE, medical superintendent of Glengall Mental Hospital, Ayr, presided. His address consisted of

Some Observations on the Care of the Insane

He dealt first with the question of boarding out, which he defined as the placing of patients of a suitable type in private dwellings. This system had been, he said, for many years an organised part of the lunacy administration of Scotland. It arose from the recognition that not all insane persons needed care and treatment in mental hospitals. These patients were often described as incurable, harmless, easily managed. In 1900 nearly 24 per cent. of the total registered lunatics in Scotland were pauper lunatics housed in private dwellings. Shortly after the war there occurred a reduction in the number of guardians available for such patients, though now the leeway was being to some extent made up. A good deal of the routine work in mental hospitals was done, under supervision, by mental patients, a sensible policy from the points of view of both therapy and economy. If this proportion could be boarded out it might do something to arrest the rate of erection of new buildings to accommodate the insane. On the other hand, in the speaker's long experience he had seen many boarded-out cases returned to the mental institution in a condition of undoubted neglect. At the end of 1936, 83 per cent. of the women patients in Glengall Mental Hospital—excluding mental defectives—were over 40 years of age; 65 per cent. were over 50; and 17 per cent. were over 70. Twenty years ago there were in the institution only 12 able-bodied male patients who could not be usefully employed; whereas to-day there were 100 male patients in this category, either too grossly demented to work or refusing to do so. This showed a remarkable change in the type of patients. There was, he declared, no evidence that patients were now kept in mental hospitals—in preference to being boarded out—in consequence of their usefulness to the institution.

Dealing next with the much discussed question of the voluntary patient, Dr McRae said that there must be no element of coercion. Many cases were sent for admission on a voluntary basis because the doctor wished to avoid the responsibility of certifying them, and also to save themselves from the anxiety which mental cases often brought. Sometimes exhaustion of the patience and sympathy of the relatives sought refuge in the same course. Often this seeking for voluntary admission was the result of the suggestion of relatives and it was easy to transform this suggestive attitude into one of coercion. Often, too, questions of finance entered more largely into the policy to be pursued with regard to the patient than did considerations for his real welfare. For example, relatives of rate-aided patients whose insurance benefit had been accumulating for months or years sometimes pressed for the patient's discharge to their home so that they might receive payment of that sum; when it had been spent they applied to have the patient recertified and returned to the mental hospital pending a further accumulation. The president contended that the patient's application for admission should only be made out and signed after the medical superintendent had examined the patient and agreed to the admission on a voluntary basis. He could be detained as a guest for three days pending this examination.

Dealing next with certification, Dr McRae deprecated propaganda which kept alive the idea of the so-called "stigma" of certification. This point of view was not always in the best interests of the patient himself, or of the security of his estate. In his experience it was uncommon for a patient to exhibit any concern as to whether he was certified or not, and any resentment he might express could usually be traced to the attitude of relatives. Another source of objection to certification in recent years was the need for disclosure to emigration authorities that insanity had existed in the family. The criminal who found himself undergoing "an indeterminate sentence" in a mental hospital often complained that he would rather have stood his trial and served a definite term of imprisonment, so that he would know when he could regain his liberty. One alleged drawback to certification was the difficulty of obtaining employment after discharge. The president, however, had known many former employers who had kept positions open pending recovery. Another misrepresentation was concerned with the popular conception of the padded room in mental hospitals. Though the General Board of Control, in their report for 1935, had ranked the disuse of the padded cell as among the more evident modern improvements, the president did not think this method of dealing with anxious and difficult cases should be termed "obsolete." The padded room in his own institution was often out of use for nine months in a year, but there were occasions when three or four such apartments would prove a great boon to both patients and nursing staff.

The impression that mental patients lived behind locked doors was unjust. There would rarely be a need for locked doors if mental hospitals could be provided with larger staffs. At Glengall House 55 per cent. of the men and 60 per cent. of the women were resident in wards the doors of which could remain open until dusk. The president also touched on the question of divorce on account of incurable insanity. He said it was quite common nowadays to be presented with an authentic history ascribing the wife's mental illness to neglect, abuse, and ill-treatment by her husband. In most female cases of general paralysis the syphilitic infection was due to the husband's misconduct. He held a higher standard of citizenship on the part of people as a whole to be the only hope of eradicating the greatest of all social evils.

On the subject of psycho-analysis the president agreed with Dr McDougall that the pan-sexual doctrine tended to spoil the proper relations between parents and children; parents had been rendered fearful of manifesting affection for their children lest it form the dreaded œdipus complex. The Freudian psychology had promoted over-emphasis on sex. The president's final theme was contraception. He regarded contraception as an interference with the natural process, which could not be carried on with impunity. Though admittedly economic and other conditions made it very difficult for parents to bring up many children in comfort the declining birth rate was a matter of grave national importance

At the discussion on the

Circulatory System and the Psychoses

Dr F L. GOLLA dealt with the physiology of the *cerebral circulation* of which much remained to be learnt For example circulatory disturbance was now held to play a large part in the causation of *epilepsy* The *importance of the circulation in the brain* was obvious the need of the nerve cell for oxygen was overwhelming in comparison with the needs of any other tissue of the body The brain represented 2 per cent of the body weight but it accounted for 10 per cent of the total body consumption of oxygen and the brain cortex consumed about ten times the amount required by the white matter The nerve cells which were chiefly responsible for the consumption of oxygen represented 1 to 2 per cent of the total volume of the brain hence a small amount of brain matter made a very great oxygen demand The amount of blood flowing to the brain was difficult to determine even approximately it was probable that 100 grammes of brain received 140 grammes of blood per minute. Was there he asked, reason to think that the metabolism of the cortex increased in response to increased intellectual activity or increased sensory stimulation ? This problem could be studied by using the temperature of the brain in different parts as a check on the amount of blood flowing to that part by means of thermo-electric couples inserted into the brain. Drugs such as strychnine caused a rise in temperature as also did pain Attempts to find out the oxygen consumption of (1) a stimulated brain and (2) an inhibited brain showed enormous variations Still it was near the truth to say that an animal undergoing strychnine convulsions consumed 700 per cent more oxygen than did a resting animal with cocaine the percentage was 120 An animal poisoned to the point of complete anæsthesia by luminal had its oxygen consumption reduced by 20 per cent when barbiturates were used the reduction was 30 to 40 per cent In seeking for the mechanism difference one was baffled by the anastomosis between the two carotids while from the arterial point of view there were other factors to be considered, notably the blood coming from the vertebral arteries It was found that there was a large variation between the oxygen consumption and the CO_2 given off at different parts of the brain, and that seemed to depend primarily on the presence or absence at the part of synapses, where the oxygen consumption was very great. Possibly there occurred in the central nervous system in addition to paths a circulation of chemical bodies. That chemical reactions could be infinitely short was exemplified by injecting male hormone into an animal castrated from birth which at once began an imitation of male sexual movements That could not be due to circulatory turgescence. CO_2 was an important means of dilating the blood vessels of the nervous system though it constricted them elsewhere Caffeine also caused a dilatation of the blood vessels of the cortex

Dr A C P CAMPBELL said that apart from the observations of Pfeiffer on the human cortex little had been attempted in the way of measuring the relative vascularity in the human brain. Measurement of vascularity was most easily done on injected brains Dr F A Pickworth's beautiful technique in his capillary stain method had provided a valuable help Part of Dr Campbell's research was to ascertain how cats varied in regard to metabolic activity and to see if it was possible to correlate varying vascularity with selective lesions of ischæmic nature By a series of slides he demonstrated his methods of making quantitative estimations of the relative density of the capillary meshwork in a series of different areas of grey matter of the cat's brain. He had focused his attention primarily on the basal ganglia these being compared with areas of the cerebral and cerebellar cortex It was found that the different basal ganglia showed considerable differences in vascularity, the globus pallidus being the least vascular and the lateral geniculate body the most vascular of all the areas examined. Observations were also made—though not so elaborately—on brains of monkeys and humans

Dr A MEYER read a paper illustrated by slides on the histopathological criteria of vascular disturbances of the brain He said that vascular lesions identical in appearance with the sequelæ of organic diseases of blood vessels had been found in a great variety of conditions such as epilepsy hypertension cardiac disease psychoses associated with infectious and toxic conditions, head injuries in which no organic lesion of blood vessels themselves could be demonstrated. Ricker Spielmeyer and others advanced the theory that these lesions owed their origin to functional disorder of the vascular system this common factor accounting for the identity in histological appearance notwithstanding the profound ætiological differences Dr Meyer's work consisted in an attempt to establish the criteria for the histological diagnosis of vascular lesions and he said that certain specially vulnerable regions of the brain served as indicators in the pathogenic analysis. He also offered a definition of the functional disorder which was responsible for the lesions

Dr PICKWORTH dealt with cerebral ischæmia and mental disorder of which the two main characteristics were mental dysfunction and a limitation of mental development with age. Mental disorder presented such wide differences from well known acute or chronic bacterial and virus diseases that any simple infectious agent as a cause of the clinical condition was quite unlikely It was strange that the phenomena of mental effort, emotion and instinct should have been for so long interpreted solely through analogy with the lower nerve reflexes. Mental and emotional potential states existed without necessarily having any nervous concomitant, and this consideration opened up a new histological approach to the study of mental disorder He had now been able to show that mental disorder syndromes were due to pathological obliteration or interruption of the vascular capillary pattern upon which the nervous synaptic pattern depended for normal function Dr Pickworth elaborated his description of the use of focal ischæmia of the cerebral synapses as a common denominator of mental and medical science by reference to mental phenomena stupor emotions and mental deficiency The main point made was that psychiatric cases should be treated as suffering from a vascular rather than from a nervous pathology

Friday morning was devoted to a discussion on the

Symptomatology of Vascular Diseases in the Psychoses and Mental Deficiency

Dr E KRAPF dealt with the circulatory factor in the pathogenesis of mental disorder He said that a deeper insight had now been obtained into the significance of the circulatory factor in mental disorder, and many psychological disorders seemed to be subject to powerful influence from that factor. He raised the question whether a common pathogenesis might lead to clinical resemblance, and showed that circulatory troubles tended to cause episodic disturbances with the symptomatology of petit mal, twilight and depressive states Hypertension troubles showed a tendency to make their appearance in such attacks, they had short twilight states and states of deep depression, and all the symptoms might occur in the same hypertensive person

Dr E GUTTMANN talked of the psychological implications of functional, vascular, and cardiac disturbances He said that functional disturbances of the circulatory system and psychopathological symptoms often occurred synchronously, either by coincidence or by some causal relationship He outlined the various possibilities of interdependence, using as an instance the mental disorder associated with Raynaud's syndrome and migraine Dr Guttmann discussed the anxiety associated with angina pectoris, remarking that the late Sir James Mackenzie did not regard anxiety as the cardinal symptom in angina, but pain, Mackenzie recognised, however, that a number of patients had sudden feelings of impending dissolution, without pain, and these he attributed to abnormal rhythm, such as flutter Probably the cause was the oxygen need of the tissues Dr Guttmann used the results seen in functional disorders in an attempt to interpret functional mental disorder in terms of its underlying pathophysiology, but he stressed the limitations of the method and the need for further research

Dr MAYER GROSS spoke on psychoses associated with hypertension arterio sclerosis, and heart failure It was only possible to understand the variability of the clinical pictures in such cases by taking into account the various ways in which the cerebral circulation and its disturbances could interfere with brain function In patients who showed symptoms of general vascular impairment one noted also constitutional peculiarities, and latent character features coloured the clinical picture so long as there was no more than a slight disturbance As the involutional phase of life showed a special preference for melancholic and paranoid reactions, these often determined what was seen in the severer psychoses, and obscured their origin A further factor which impeded diagnosis was the frequent coincidence of pre senile and senile parenchymatous changes in the brain Dr Mayer-Gross discussed involutional changes of personality in regard to their relation to arterial disease If the typical organic symptoms, such as impaired consciousness, delirium, Korsakow's syndrome, and dementia, were caused by vascular disturbances, this fact might help to solve the problem of how far they could be regarded as focal symptoms—as opposed to general ones—and related to focal lesions

During the meeting the bronze medal of the association was awarded to Dr Edward S Stern, and the divisional prizes to Dr E H Kitching and Dr J S Horsley

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WALSALL GENERAL HOSPITAL—A pay-bed ward will be added to this hospital before the end of the year It will cost £8000 and will accommodate 16 persons Later it is hoped to proceed with the extension of the X ray department

OXFORD OPHTHALMOLOGICAL CONGRESS

THE twenty sixth annual meeting of the Oxford Ophthalmological Congress was held at Keble College from July 8th to 10th

Myopia

With Mr C G RUSS WOOD, the master, in the chair, a discussion on the problem of myopia was opened by Mr N Bishop Harman and Mr Arnold Sorsby, the two speakers presenting diametrically opposite views

Mr BISHOP HARMAN held that myopia was a disability, often a grave one The myopic eye was not so resistant to fatigue or disease as the normal eye From a statistical analysis of the increasing incidence of myopia with increase of age during childhood, he stressed the fact that myopia was a disease of childhood. The work of Cohn had shown that the school must be held largely responsible for the production of myopia, but this view has repeatedly been challenged and recently Amy Barrington and Karl Pearson have summed up to the effect that the charge against the school had yet to be finally established. The speaker could see no support for the theory that heredity is an important factor in the genesis of myopia In a series that he had followed up myopia was present in neither of the parents in 67 per cent, whilst the sex distribution, with its incidence of 8 per cent on girls and 5 per cent on boys, also pointed towards environmental factors He held that astigmatism is itself a potent factor in producing increase of refraction, and amongst other factors of significance illness must not be overlooked In an investigation in special schools he found that the incidence of myopia amongst 959 deaf children was 6 3 per cent, amongst 217 crippled children 12 3 per cent, whilst amongst 128 children with amoral disturbance the incidence was only 1 5 per cent Further evidence for the environmental significance in the production of myopia was brought out by the fact that whilst an ordinary London County Council school will give 26 per cent of visual defectives, schools attended by alien children in crowded areas showed 36 per cent, and schools attended by native children in crowded areas 30 per cent Similar discrepancies in the incidence of myopia and visual defect was shown by an analysis of defects in patients attending different types of hospitals Thus in a hospital in a poor neighbourhood 23 per cent of patients showed myopia, whilst in a better class district only 15 per cent As confirmatory evidence of the significance of environmental factors in the production of myopia, Mr Harman quoted the declining rate of myopia during the past fifty years in Sweden, where records have been kept and where an extensive system of school hygiene had been in operation He regarded myopia as more than a disability In his own statistics he found that with myopes of 3–5D there was ultimately a break down in 33 per cent of patients, this rose to 66 per cent in myopes 5–10D, and to 77 per cent in myopes over 10D In the blind schools no less than 3 6 per cent of children are recruited from myopes, and amongst the adult blind myopia accounts for up to 14 per cent His own statistics further supported him in his view that it was close work which was responsible for the break down of the adult myope 53 per cent of those who showed disabilities were engaged in close work. Mr Harman related that the myope school arose not so much to satisfy a theory of myopia as from his experience in 1905 when he found that 6 per cent of the children in blind schools were myopes who were unable to benefit from teaching in ordinary schools but were none the less completely out of place in the blind school. The immediate justification of the myope school was that the myopes needed special care He thought that those who believed in the predominant influence of heredity were driven to assume a fatalistic attitude on a subject on which a good deal of practical help can be given

Mr **Arnold Sorsby** said that Mr Harman had advanced a conclusive argument in favour of the significance of heredity in myopia The fact that Mr Harman had found a family history in 33 per cent of his cases fitted in well with the view that myopia was frequently of a recessive character Viewed from that aspect, the positive findings as regards the family history in 33 per cent. of cases were more significant than the negative findings in 67 per cent. of cases His own approach to the subject consisted of a criticism of the theoretical basis of the orthodox attitude During the middle of last century he said it became an accepted dogma that the physical basis of myopia was an undue axial length. That view was never supported by any extensive evidence particularly in the case of low myopia and medium myopia In fact the evidence rather pointed in the opposite direction for there is much to show that at any rate in the lower degrees of myopia the axial length fell within the range of the normal. The suggestion that the myopic eye was an elongated eye fitted in well with the outlook of the nineteenth century which saw everything in terms of mechanics the problem of myopia to them became a problem in mechanics as to what mechanical factors would produce axial elongation It was thus that over correction and under-correction of myopia, the use of atropine and of eserine the stimulation and the paralysis of accommodation tenotomy of the internal rectus and of the oblique muscles all had their vogue. School hygiene developed largely as the result of the emphasis on the mechanical factors in the production of myopia so that some good, though incidental results were also to be registered from this approach. Still it remained a fact that there was no evidence that myopia had decreased in incidence as a result of the elaborate measures of school hygiene The often quoted example of Sweden did not stand detailed analysis for Swedish ophthalmologists are not in agreement either on the facts of the case or on their interpretation The mechanical view of myopia failed to explain a series of well established clinical facts such as the greater incidence of myopia in certain families social groups, and races the unequal development of the two eyes in anisometropia; the different course of hypermetropia in two children under the same environmental conditions one ending in myopia and the other not the incidence of complications of myopia late in life long after the progressive activity of myopia had ceased; and not least the familial incidence of the complications of myopia often having no bearing to the degree of myopia The qualifying conception of congenital predisposition that had been advanced to cover the mechanistic conception of the nineteenth century really shifted the emphasis on to the nature and significance of that congenital predisposition and this became the essence of the problem Mr Harman had spoken of myopia as a disease This was surely too narrow a conception to cover all myopia. Some myopia had to be regarded as physiological in the sense that any deviation in stature from the ideal mean stature seen in any particular groups was not pathological. The extensive work that had followed this biomathematical approach of Steiger justified the division of myopia into physiological and pathological whilst the recent work of Tron seriously questioned the validity of the argument that myopia was due to axial elongation The problem was far more complicated In the building up of the total refraction of the eye three large variables had to be taken into account the cornea, the lens and the axial length and it was possible to obtain practically the whole gamut of refractive errors by different combinations of these three variables each of which would still fall within the normal range. The fundus changes in myopia had to find not a mechanical but a biological explanation. It was not unlikely that these changes might be abiotrophic in character and that they might be linked with myopia rather than be the result of it in the pathological cases During the process of growth extensive changes in the anterior segment of the eye must occur to compensate for the axial elongation that takes place This was a problem that had received little attention and for the explanation of myopia it was necessary to know not only the genetic behaviour of the complications of myopia but also that of the different dioptric components of the total refraction. Mr Sorsby said that whilst he did not minimise the great disabilities of pathological myopia he felt that it was unfair to apply rigid measures, based on mechanistic theories to all myopia most of which was after all biological and of no pathological significance

In the subsequent discussion the same divergence of opinion was revealed.

Mr T **Henderson** (Nottingham) held that myopia was a constitutional disease Mr F A. **Williamson Noble**, speaking on the question of heredity thought that refractive errors and iris colour were linked a child inheriting the iris colour of one parent is also likely to inherit the refractive state of that parent Mr R **Beatson Hird** (Birmingham) emphasised the age incidence of the complications of myopia and as regards treatment of the myopic child he thought that adrenaline drops as advocated by American observers might be useful Mr T **Harrison Butler** (Birmingham) referred to the hereditary significance of anisometropia he thought that an increase in the mass incidence of myopia went hand in hand with deterioration of social conditions Sir **Arnold Lawson** strongly deprecated the excessive significance attached to the degree of myopia as opposed to the behaviour of the eye

Four more papers were read on the first day of the congress Mr **Harrison Butler** in a profusely illustrated account of *lenticonus posterior* and allied anomalies at the posterior pole discussed the slit-lamp appearances of the rare true lenticonus posterior and of a number of conditions including industrial cataract which simulate it. Group Captain W **Guilfoyle** spoke on his personal experiences as a *uniocular pilot of aircraft* and Wing Commander P C **Livingston** on debatable ground in the matter of the monocular and uniocular pilot of aircraft It appeared that the necessity of full binocular vision for piloting was rather over estimated Mr **Bernard Chavasse** (Liverpool) described the difficulties and uncertainties of the classical Landolt operation for *myotomy of the inferior oblique* and gave details of an open method which he practised.

Hormones and Vitamins in Ophthalmology

On Friday the proceedings were opened with a paper by Sir WALTER LANGDON BROWN on hormones and vitamins in ophthalmology. Discussing the rôle of vitamin A, he recalled the discovery of its significance for keeping intact the epithelial barrier against infection and its ineffectiveness in checking such an infection once it had broken through the epithelium. The work of Needham had shown the importance of vitamin A for the welfare of the offspring of the pregnant animal, for if a sow is deprived of vitamin A the farrow may develop without an eye cup or lens. Vitamin A had therefore to be regarded as a chemical organiser. The fact that retinal extract, rich in vitamin A, stimulated growth was another indication in the same direction. The deprivation of vitamin B_2 had a striking effect in experiments on rats, as an anterior interstitial keratitis and proliferation of the epithelium and the lens was obtained. It was possible that some forms of retrobulbar neuritis associated with cord lesions might be due to the vitamin B_2 deficiency, though there was no conclusive evidence as to the rôle of vitamin B_1 in glaucoma just as there was nothing conclusive on the significance of vitamin C in ophthalmology. Vitamin D, on the other hand, was closely associated with hypocalcæmia and the characteristic cataract formation in tetany and other hypocalcæmic conditions. As regards the ductless glands, the pineal body had no direct influence on ocular lesions; it did, however, give indirect pressure effects. The pituitary gland acted in a double manner. Pressure effects were seen in disease and also in pregnancy, this latter to such an extent that in any disease of the optic nerve in pregnancy the pituitary has to be suspected. Sir Walter agreed with the advocacy of surgery rather than X ray therapy in the chromophobe type of pituitary tumour. Chemically the anterior pituitary secretion was responsible for exophthalmos. The experimental work of Marine and Rosen on the production of exophthalmos by injection of methyl cyanide had greatly helped to clear up the mechanism of this symptom, as it has also helped to explain the rather paradoxical increase of exophthalmos occasionally seen after thyroidectomy. The suprarenal gland had been implicated in glaucoma, but the evidence was doubtful, just as the evidence on the significance of the gonads, supported by clinical reports on the value of œstrin in retinitis pigmentosa, must also be regarded as doubtful. There was also a large series of affections in which the rôle of endocrine glands was assumed on incomplete evidence, fragilitas ossium, the Laurence Moon Biedl syndrome, arachnodactyly, and osteitis deformans being amongst them. As regards the pancreas, recent work by Waite and Beetham questioned the significance of diabetes in ocular lesions. Sir Walter himself was convinced to the contrary from the clinical evidence. Temporary ophthalmoplegia seems to have been seen more frequently before insulin was introduced and was easily controlled. The differential diagnosis of diabetic retinitis still seems to present tangible difficulties and, in his experience, the condition did not respond to insulin therapy. He urged that patients treated with insulin should be warned of the change of refraction that occurred whilst the blood sugar was being stabilised, and concluded by emphasising the revolutionary changes that have taken place on dietetics in diabetes since the introduction of insulin. A fuller appreciation of such changes, he thought, might help to avoid ocular complications.

Night-blindness

The Doyne memorial lecture on night blindness in eye disease by the late Dr DAVID JAMES WOOD (Cape Town) was read by his colleague, Dr R. C. J. MEYER (Johannesburg). The paper ranged over the chemical, embryological, histological, and pathological aspects of the problem. The work of Verhoef in bringing out "a new membrane of the retina" which apparently did not act in a supporting capacity but for the separation of two systems of nutrition for the rods and cones, one for general nutrition and the other for photo chemical metabolism, was recalled. It was suggested that the efficiency of the pigment epithelium was responsible for the metabolism of the photosensitive substances and that the health of the epithelium could not fall below a definite limit without endangering the rods and cones. It had been shown that during the process of dark adaptation extensive changes took place in the contents of vitamin A and that visual purple was directly dependant upon vitamin A. Vitamin A deficiency would therefore cause a failure of visual purple mechanism which would also be disturbed by failure of catalytic agents to initiate and keep up this metabolism. Attention was drawn to the work by Staz, who had shown that retinal adaptation showed considerable variations in different people; it might therefore be concluded that the efficiency of the enzyme responsible for the mechanism of vitamin A—visual purple—was not the same for all people. Discussing retinitis pigmentosa and allied conditions as well as epidemic night blindness, the argument was advanced that the theory of vascular sclerosis, which in any case was untenable, did not help to explain things, and that the abiotrophy theory was itself in search for a cause. This, it was argued, was to be found in an inborn defect of the enzyme, which probably produces the pigments in embryonic life and was responsible for the formation of visual purple postnatally. Failure of the enzyme would explain the failure of the production of visual purple and a perversion of it the production of pigment in retinitis pigmentosa.

Other papers read at the congress included contributions by Prof. JOSEPH IMRE (Budapest) on *plastic surgery of the eyelids*; by Dr JOSEPH DALLOS (Budapest) on the individual fitting of *contact glasses*, stressing the importance of a large shell and one that fitted the globe perfectly; by Mr TUDOR THOMAS (Cardiff) on the technique of *corneal transplantation*, pointing out that the discontinuance of the use of oil for the reception of the graft and a new technique of suturing so that, when the stitches were tied, the knot did not lie on the graft. Dr BERNARD SAMUELS (New York) spoke on the *histopathology of papillœdema*; Mr E. F. KING on the classification of the *ocular melanomata*; and Dr D. V. GIRI (Eastbourne) on a *new method of advancement* with a single one armed suture. A highly appreciated paper came from Dr A. J. BEDDELL (Albany, N.Y.), who showed a series of fundus photographs in natural colours, taken by a technique he had elaborated.

MANCHESTER ROYAL INFIRMARY.—*It is expected* that the private patients' home at this hospital will be opened before the end of the summer. The home will contain 100 beds; a number will be available at four guineas a week and more than half at not more than six guineas a week. The home has cost £95,000.

REVIEWS AND NOTICES OF BOOKS

Psychiatry for Practitioners

By Various Authors Edited by HENRY A CHRISTIAN M.D Sc D (Hon.) Hersey Professor of the Theory and Practice of Physic Harvard University; Physician in Chief to the Peter Bent Brigham Hospital Boston Mass. London Humphrey Milford Oxford University Press Pp 646 30s

AMERICAN psychiatry has been on the whole characterised by an emphasis on therapeutic opportunity and dynamic psychological aspects of causation this temperately stated is a striking feature of the articles included in this work. Of the eleven contributors five are connected with the University of Pennsylvania; the other authors in the U S.A are Prof C O Cheney of New York Prof F G Ebaugh of Colorado Prof. Eugen Kahn of Yale and the late Prof William A White of Washington There are two contributors from Great Britain Prof. D K Henderson and Dr T A Ross

The long opening chapter by Prof E A. Strecker and Dr H A. Palmer deals with the recognition and management of the beginning of mental disease It is sensibly written but might well have been curtailed by the editor since it contains much that has been repeated in other chapters of the volume; as it stands it is almost an epitome of psychiatry In general the book has not been strictly edited and it is needlessly swollen by case-histories—the bane of psychiatric manuals The psychiatry of childhood is described by Dr G H J Pearson without reference to somatic factors in behaviour disorder but with full consideration of the psychological aspects A brief and useful chapter on post-encephalitic and post-traumatic behaviour disorders by Prof Earl Bond a concise account of mental deficiency by Dr E A Whitney and of psychopathic personalities by Prof Kahn are followed by a description of toxic and organic reaction types by Prof. Ebaugh this is written simply and to the point. Prof White's account of paranoia and paranoid conditions stresses the psycho-analytic view of the pathology of the illness

The dementia præcox (schizophrenia) group has been entrusted to Prof Cheney who treats it competently along conventional lines The chapter on affective reaction types by Prof. Henderson is refreshingly plain-spoken and reflects a more individual (though still orthodox) point of view than do most of the other chapters of Dr Ross's section the same might be said Prof Henderson gives critical attention to recent work dealing with his topic but his text is notably burdened with case reports Dr Ross recapitulates in the chapter on psychoneuroses his views about their nature and treatment giving them a clear and attractive presentation He allots much more space to anxiety reactions than to hysterical and obsessional ones and says little about personality or constitution

Since this work has not been written for psychiatrists but for general practitioners it is right that it should contain little theory or argument and much plain clinical description and advice Though some of the authors for example Dr Pearson have not succeeded in keeping clear of debatable and rather unpractical explanations most of them write a straightforward acceptable account of their subject, generally coloured by optimism

The 1936 Year Book of General Medicine

Edited by GEORGE F DICK, M D (Infectious Diseases) LAWRASON BROWN M.D (Diseases of the Chest) GEORGE R MINOT M.D DSc F R C P (Hon) Edin, and WILLIAM B CASTLE M.D A M. M D (Hon) Utrecht (Diseases of the Blood and Blood Forming Organs and of the Kidney); WILLIAM D STROUD M D (Diseases of the Heart and Blood Vessels) and GEORGE B EUSTERMAN M.D (Diseases of the Digestive Organs and of Metabolism) Chicago: The Year Book Publishers. 1937 Pp 848 12s 6d

The 1936 Year Book of General Therapeutics

Edited by BERNARD FANTUS M S M.D Professor of Materia Medica, University of Illinois; and SAMUEL J NICHAMIN A B M D Assistant Attending Physician Cook County Hospital. Same publishers 1937 Pp 460 10s 6d

THE Year Book of General Medicine continues under the same distinguished editors It is rather full and detailed for the needs of most general practitioners but to physicians general or specialised, it is of very great value In the sea of the year's literature its net is thrown wide but not all that is caught is kept; papers are wisely chosen for their interest or their usefulness and are not merely boiled down but are served up as well prepared résumés written with understanding and garnished here and there with authoritative comment It is good and concentrated fare and should be widely appreciated

The same is true in large measure of the Year Book of Therapeutics though in this subject it is especially difficult to distinguish at their first appearance the good discoveries from the bad Prof Fantus notes, with a satisfaction which we share that in modern therapeutic literature carefully controlled statistics now largely take the place of the impressionism of the old school. He finds no single outstanding achievement in the year under review but an amazing number of new methods and especially of modifications and improvements of old methods which seem to be of real value It is certainly true that the doctor of to day can do a good deal more than he could ten years ago to modify the course of disease for the advantage of the patient provided he has taken the trouble to find out how The Year Book is one very good means to that end

Les lésions organiques du cœur

By R LUTEMBACHER. Paris Masson et Cie 1937 In two vols Pp 351 Fr 330

THE medical knowledge of to-day has been founded essentially on clinical studies supported by necropsy findings and these methods of observation constitute the basis for the generalisations to be found in modern text books. Dr Lutembacher appreciates the importance of this traditional approach to medical problems but he has broken away from the standard method of presentation Here are gathered together examples of every important variety of heart disease; by this process of integration he has produced in fact an atlas of heart disease in which case records are reported and accompanied by photographs of the morbid conditions found in the heart. Perhaps realising that no photograph however good compares with a drawing or painting for illustrative purposes he has provided representations in natural size, and the photographs also supplied are excellent Each report is given in its relation to a broad classification of cardiac pathology, thus in the first volume acute endocarditis is subdivided into simple (plastic) and malignant forms, the latter being grouped as primary and secondary and including the various forms of intracardiac thrombosis, endocarditis lenta, and such related states as infarctions of spleen and cerebral embolism Thirty-four case reports and photographs relate to acute endocarditis alone The second volume includes sections on myocarditis, the effects of coronary artery disease, congenital heart disease, aortitis, and aneurysms The author affirms his belief in alcohol and lead as agents of myocarditis and even seems to include obesity and diabetes in this category Orthodox opinion in this country would probably allow to these factors no further adverse effect on the heart muscle than they could produce through damage to the coronary tree The example of "myocardite éthylique" given in "observation 79" suggests in the description no condition in the heart that might not be attributable to the hypertension and obesity together, apart from alcohol

A work of this kind is instructive, possibly chiefly to the author Such a compilation must clarify his ideas, but the work as a whole is not very readable It is, however, valuable for reference and interesting to those making a study of special diseases Obviously no pains have been spared in the preparation of the material, either text or photographs, and the production is noteworthy

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The Metabolism of Living Tissues

By ERIC HOLMES, M.A, M D, Fellow and Tutor of Downing College and University Lecturer in Biochemistry, Cambridge London Cambridge University Press 1937 Pp 235 *7s 6d*

An Introduction to Comparative Biochemistry

By ERNEST BALDWIN, B.A, Ph.D, Fellow of St John's College, Cambridge, University Demonstrator in Biochemistry Cambridge At the University Press 1937 Pp 112 *5s*

THE fact that biochemistry is now taken in Part I of the natural sciences tripos at Cambridge has apparently stimulated members of the Cambridge school of biochemistry to write books on their own special subjects which will appeal to many who are not concerned with the teaching of undergraduates

The aim of Dr Holmes's book is—to quote from Sir Gowland Hopkins's foreword—"to provide an adequate survey of all that is most significant in our present knowledge of the dynamic side of biochemistry" After a brief consideration of enzymes and oxidation processes, he deals with the metabolic activity of the various tissues in turn—liver, kidney, muscle, and the nervous system This original treatment results in the formulation of many valuable generalisations which probably have not been made before A book which deals with tissue metabolism in this way has long been wanted. It is strange to find it in the form of a students' text book. Chapters on the influence of salts, hormones, and vitamins on metabolism conclude the book, which is written throughout in a readable and sometimes rather conversational style The author's frequent confessions of our ignorance form a pleasant contrast to those schemes of paper chemistry which mar so many text books of to day

To those who see biochemistry almost solely in its relationship to mammalian physiology, Dr Baldwin's book offers a glimpse of a new world. The first few sections deal largely with the way in which the various organisms maintain their osmotic pressure and conserve their water Then the author considers the metabolism of nitrogen and the distribution of nitrogenous bases, phosphagen, and various pigments and catalysts throughout the animal kingdom The book deals only with certain selected subjects, but these are ones with good stories, and we must confess to finding them fascinating The work is enlivened by a pleasant wit

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Life and Convictions of William Sydney Thayer, Physician

By EDITH GITTINGS REID London Humphrey Milford, Oxford University Press Pp 243 *10s 6d*

W S Thayer obtained his medical degree in 1889 He then went abroad for a year spending most of his time in Berlin and Vienna and studying pathology under Virchow For a brief period he was in France, long enough to find that "her savants, the methods of her clinics, the quality of her literature all suited him" After his return to America he hesitated as to his next step Ultimately he decided to start in practice in Boston in a small room, which he used for consultations, sleeping, and study It is of interest to speculate how this experiment would have turned out had not Fate, after only a few weeks, summoned him to Baltimore He became assistant to William Osler at the Johns Hopkins, and his allegiance to his chief and to the institution proved determining factors in the life of a physician who was also a fine poet and an expert linguist

In his writings he aimed always at perfection "I have a passion to use the perfect word," he declared, "the inevitably right sentence" Dr Welch said of him that his capacity for taking pains was limitless, adding "one may take pains and make little headway Thayer's labours always led to greater and greater light in obscure places Often his insistence on details was thought by the ignorant to be fussiness, but it was his sense of the value of the smallest clue that enabled him to give a perfect clinical presentation" He has been called "The Physician's Physician," and his career provides an example of the development of a great clinician after an apprenticeship in pathology

The title of this book is perhaps misleading It is more of a sketch than a life, and leaves one with the feeling that an adequate biography of this lovable, humorous, and invincibly truthful physician has yet to be written

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A Dictionary of Medico-Legal Terms

By ALBERT CREW, Barrister at-Law, and K, AYLWIN GIBSON, M R C S, L R C P London Sir Isaac Pitman and Sons 1937 Pp 80 *5s*

THE title page of this dictionary declares it to have been compiled for criminal lawyers and police officers The preface announces that it is also intended for jurors and medical witnesses The juryman may repudiate the duty of special study, and the doctor may feel reasonably confident that he is already familiar with most of what the book offers him To those, however, who have need of instruction in medico legal terms from "Abdomen" to "Zygoma," this handy little dictionary may be recommended

THE LANCET

LONDON: SATURDAY, JULY 17, 1937

THE MILK PROBLEM

THERE are really three problems. The first is to persuade people that milk is good for them. The second is to make it cheap enough for them to buy. The third is to ensure its safety. We are here concerned with the third—and it is perhaps the simplest. For in the whole range of preventive medicine there is probably no other problem which has been so fully investigated, in which the need for action is so obvious, in which the remedy is so easy. At the Royal Society of Medicine a few months ago[1] Dr. W. G. SAVAGE said that 1700–2000 deaths, mostly in children, are caused annually in England and Wales by bovine tubercle bacilli conveyed in milk or milk products. These figures are not guess-work, and if the estimate is wrong it is because it is too low. Other diseases transmitted by milk from the cow to man are undulant fever (which Prof. G. S. WILSON reckons at 500 cases a year), streptococcal infections (of which there have been some disastrous outbreaks, including several thousand cases in Hove and Brighton in 1929), and salmonella infections. Besides these there are numerous outbreaks of scarlet fever, diphtheria, and dysentery spread by infected milk, and if any further reminder is required we have the late Dr. VERNON SHAW's report[2] on enteric fever in Bournemouth, Poole, and Christchurch last year, in which 718 cases and 51 deaths were traceable to raw milk retailed by one distributor. In face of all this none can deny that the amount of human disease caused by infected milk is very substantial, and the facts have repeatedly been brought to the attention of responsible government departments not only by outside bodies but by committees they themselves have set up. Nevertheless other considerations have always so far prevented effective measures from being enforced—though it is still stated that this country has the best public health service in the world.

What measures would be effective? Tuberculosis, the most important disease spread by milk, can be tackled in one of two ways, the first of which is to obtain milk from tubercle-free cows. But as about 40 per cent. of cows react to the tuberculin test and the others cannot be deemed safe, this is far from easy. Considerable efforts by the Ministry of Health and Board of Agriculture have resulted in an inconsiderable proportion of herds being freed from tuberculosis, and though the past year has shown an encouraging advance a great many years must go by before any large proportion of the population get milk from tuberculin-tested herds. To secure safety from the other diseases mentioned—and also from tuberculosis—there is only one thing to do, and that is to heat the milk before use. Boiling alters the taste and to some extent the composition, but a satisfactory alternative is pasteurisation, which is officially defined as heating the milk to 145°–150° F. and holding it between these figures for half an hour. The effectiveness of such heating has been proved by innumerable experiments, and any who doubt it should read the article by Prof. H. D. WRIGHT and his colleagues on p. 151 of our present issue.

Pasteurisation is opposed because it is thought likely to disturb the milk business and counter the interests of producers. Weighed against disease and death this does not seem convincing, and much play is accordingly made with suggestions that it alters the constitution of milk, which therefore—alone among protein foods—should be taken raw. But millions of people abroad have been taking pasteurised milk for many years without demonstrable detriment, and many other millions are taking it in our own great cities to-day. It is evident that if cow's milk were the *sole* food of human beings it would be better taken raw, but the latest inquiries[3] demonstrate once more that for practical purposes, as part of a mixed diet, pasteurised milk is as good as raw milk. Undoubtedly pasteurisation requires skilled supervision, but the means are available. We emphasise the completeness of the work already done because the latest move of those who oppose pasteurisation is to propose a detailed inquiry into the whole subject. There is no case for such an inquiry. What is needed is not inquiry but action. It may not be administratively possible to pasteurise the whole milk-supply at once, but it is certainly feasible that all the larger urban areas should have the power—and we hope the duty—to see that only safe milk is sold within their borders. Tuberculin-tested milk gives this safety as regards tuberculosis, and pasteurisation properly conducted gives safety from all risks. The time has come when no ordinary raw milk should be sold in any of our larger urban areas or distributed on the authority of any education or other local authority. And later the safeguard must be extended to the countryside and smaller towns.

UNDER-WATER EXERCISES

IT has long been known in hydrotherapeutic establishments and elsewhere that patients with stiff joints or partially paralysed muscles can carry out exercises in a bath which they would be quite incapable of executing outside it, and the experiments of CROWDEN[4] at the British Red Cross Society's clinic in 1935 gave striking proofs of this. He found that a man who was exhausted in two minutes by a certain exercise carried out on land could continue the same exercise almost indefinitely in water. In executing a simple arm-bending or leg-bending exercise the increase in oxygen requirement over the resting level was about twice as great in air as in water, and with a trunk exercise the proportion was about three to one The explanation of this is, of course, that the buoyancy of the water supports a large proportion (some 19/20ths) of the body-weight, and although the moving limbs encounter greater resistance the work done against gravity is almost abolished It follows that if only a small fraction of its power remains in a paralysed muscle, this may still suffice to produce perceptible movement in a limb which is immersed in water The warmth of a bath, too, may do much to allow of movement in a spastic limb by reducing spasm and the resulting pain. To a certain extent exercises can be carried out in an ordinary bath, but they must of necessity be limited to the limbs, and where the trunk and neck are to be exercised the use of a swimming-bath is essential The latter has the advantage that it permits of several patients being supervised simultaneously by one attendant, but far more important is its effect on the patient's mind What a paralysed person wants above all is to be able to move about without assistance, and this he may very well be able to do in a swimming-bath, even though he may need help if he is to take a step outside it The enthusiastic cooperation of the patient which this ensures contributes largely to the success of the treatment, especially where return of function is a matter of re education

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[1] *Proc. R. Soc. Med.* June, 1937, p. 25.

[2] *Rep. publ. Hlth med. Subj. Lond.* No. 81, 1937.

[3] See *Lancet*, June 12th, 1937, p. 1417.

[4] Crowden, G. P., *J. Physiol.* 1935, 84, 31.

Under-water exercises have been much used for some years at Warm Springs in Georgia, and this model institution can count among its successes the partial recovery of FRANKLIN D ROOSEVELT from the effects of anterior poliomyelitis which had previously crippled him In England the hot and buoyant waters of Droitwich are famous for their power to restore movement to painful joints and strength to wasted muscles, and our own PREMIER has remarked that it is well worth while to get an attack of rheumatism or lumbago to experience the comfort of a bathe in them At other British spas, notably at Bath, the "hot pool," which is large enough to permit of free movement, is in constant use, where necessary the patient is lowered into the pool by means of a sling But much is also possible without the natural advantages of a spa, and in the last two years clinics for this form of therapy have been opened at the Rudolf Virchow Hospital in Berlin and at the Lainz Hospital in Vienna SCHOLTZ[5] in Berlin reports that he has treated some fifty patients with results that he describes as striking, including cases of spastic and flaccid paralysis from disseminated sclerosis, vertebral lesions, poliomyelitis, and polyneuritis In tabetics he did not find the method so useful URBAN[6] in Vienna has treated a further series of cases of similar type, also with satisfaction, though he advises particular care in cases of disseminated sclerosis and progressive muscular atrophy, and those in which the patient's general condition makes exertion dangerous Incidentally he remarks that a considerable strain, both mental and physical, is placed upon the attendants He has also done some interesting research in the bath into what he calls the "swimming phenomenon," based on the observation of LUCIANI[7] in 1893 that dogs rendered ataxic by cerebellar avulsion could swim even though they could not walk. He found that four patients with advanced cerebellar ataxia due to disseminated sclerosis, who could neither walk nor stand on land, could swim with astonishing efficiency, and that their ataxia was scarcely noticeable in water, whereas patients with ataxia from extracerebellar causes could not swim, even though their walking was improved by immersion Another interesting finding was that some deaf-and dumb patients with completely insensitive labyrinths could swim quite normally, contrary to what is generally believed

At the Berlin clinic the swimming-bath is some 16 feet long by 13 feet broad, the one at Vienna being slightly smaller It contains a couch for massage and resting, and there is a rail over the bath to which a patient can hold when doing walking exercises Sessions last for from a half to one hour daily, and the masseuse stands in the water the whole time during treatment, since some patients need a certain amount of assistance, at any rate in the early days Non swimmers wear an inflated rubber ring around their necks Beyond the initial outlay the treatment is said on the whole to be inexpensive, the main expense of the bath being the cost of refilling it on alternate days The installation of a continuous purification system would at least reduce the number of refills required It seems clear that such a bath is a valuable asset to any physical therapy department dealing with neuromuscular disorders Apart from its therapeutic possibilities, it offers scope for inquiry into problems of equilibrium

HOSPITALS TO LAST

AN exchange of letters between Sir CRISP ENGLISH and the Incorporated Association of Architects and Surveyors reopens the problem of hospital construction Sir CRISP would be satisfied to rebuild St George's Hospital with material that would last (say) 50 years The secretary of the Association submits that sound buildings ought to last much longer than that This is an old problem in a new setting The arrangement of hospitals gets quickly out of date, and the solidity of their structure and the heavy capital cost stand in the way of replacing what may long have been obsolete For this reason it has often been suggested that hospitals should be built in temporary or semi-permanent style Even medical administrators, however, admit the difficulty of heating and cooling, and the recurrence of minor nuisances such as breaches in the walls and floors and leakage of roofs, when the building is temporary Architects tell us that there is little saving when the cost of maintenance of the temporary fabric is added to the annual service of the loan, the figures over a long series of years would be interesting, but our type of hospital organisation does not lend itself to the collection of such information. Semi-permanent buildings of light brick or other solid material are not much cheaper in the end, for a large proportion of the cost is incurred on foundations engineering equipment and other provision on which economy cannot properly be exercised Moreover the building is not internally sound proof This type of structure appears to be practicable only for low buildings with the attendant inconvenience of widespread units

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[5] Scholtz H G, *Dtsch med Wschr* 1936 62 417
[6] Urban H, *Wien klin Wschr* June 4th 1937 p 808
[7] Luciani, L Das Kleinhirn Leipzig 1893

From the financial point of view it is seldom realised that whether the original construction is permanent or less permanent, its cost is only the beginning of capital expenditure Actual figures are not easy to obtain in this country but some facts are given for American hospitals by ROREM[1] Between 1923 and 1927 149 hospitals in Pennsylvania increased their total investment by more than 50 per cent although their bed capacity rose by less than 7 per cent In New York between 1912 and 1927, the capital investment of 13 hospitals increased by 115 per cent, against a rise in bed capacity of only 49 per cent As a hospital ages its cost of reconstruction increases irrespective of the quality of the initial structure, until a time must come when the original expense is a comparatively small part of the total While voluntary hospitals rarely borrow for purposes of capital expenditure, local authorities usually do and sanction for obtaining money by loan is given by the Minister of Health who determines the term of repayment This usually varies from 25 to 30 years the latter period covering most of the land and main buildings Perhaps the relative shortness of the loan sanction is intended more to limit the ultimate cost (since the sum of the total outgoings on interest and repayment is greater with long term borrowing) than as a recognition that a hospital's life should not be more than 30 years

The plan followed at the Birmingham Hospitals Centre is a compromise Here internal walls which are not essential to the support of the fabric are being built of light and easily removable material, so that while the main building is meant to last for a very long period its internal arrangement can be adjusted to meet changing needs The idea is sound, but it remains to be seen whether rooms so separated are sufficiently insulated from one another to prevent noise and to what extent it is possible to allow for unforeseen developments by this means.

LONDON CORONERS QUALIFICATIONS

OUR legal contemporaries make interesting comments upon the decision of the London County Council (discussed in our columns last week) which insists that in future only barristers or solicitors shall be appointed to metropolitan coronerships In spite of the opinion of the Bar Council there would probably be general agreement that the best equipped coroner would be a man who possessed high legal and medical qualifications in an equal degree The system of apprenticeship and practice in the professions of law and medicine prevents the evolution of this ideal type No man can serve two masters in this fashion Instead London has had two not inadequate alternatives, the lawyer who has qualified in medicine and the doctor who has qualified in law There is little to choose between the two The *Law Times* remarks in this connexion that in proposing to insist upon legal qualifications exclusively, the L C C ought to stipulate not only for five years' study in the legal profession but also for some period of practical legal experience It adds the comment that it is not impossible to become and remain a barrister for five years without acquiring the foggiest ideas about the sifting of evidence This possibility indeed is said to be much more likely than that of becoming a doctor without gaining practical experience which would be useful at an inquest or at any rate serviceable as a foundation on which to base medical knowledge afterwards acquired through actual experience We cite our contemporary's observations with all due respect

The *Law Journal* questions the decision of the L C C on grounds both of law and policy It expresses a doubt whether the council has power to say that no medical man need apply unless he is also a barrister or solicitor If the country is to have fresh legislation on coroners the new laws are likely to have the effect of confining inquests to decisions on the cause of death to the exclusion of verdicts which apportion blame or pronounce upon civil liabilities If this forecast be correct, observes the *Law Journal* there are strong reasons for having in the coroner's chair men of medical knowledge The careless doctor or surgeon or the wilful murderer who goes coolly to the inquest, may escape the vigilance of a lawyer who knows nothing medical unless he is informed and instructed by medical witnesses 'an experienced doctor would be well able to see through such a witness These views on the L C C's decision coming as they do from a legal quarter are an important supplement to the recommendations of the Departmental Committee on which the legal element was so eminently represented The *Law Journal* concludes its remarks with a reference to somebody's suggestion that coroners should be appointed in pairs—one a lawyer and one a doctor This presumably would require fresh legislation But if the scope and conditions of inquests are to be revolutionised as the Departmental Committee recommended fresh legislation will in any case be required There may be justification for mending or ending the almost immemorial institution of the coroner's inquisition but let it be done by Parliament after full consideration of pros and cons A Departmental Committee's suggestions needless to say have no legislative effect The Coroners (*Amendment*) Act of 1926 laid down the qualifications of a coroner He might be either a barrister solicitor or legally qualified medical practitioner Has an appointing body any right by executive action to purport to repeal the words ' or legally qualified medical practitioner ?

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[1] Rorem C Rufus: The Public's Investment in Hospitals, University of Chicago Press

ANNOTATIONS

ABORTION IN NEW ZEALAND

NEW ZEALAND is an extreme example of a tendency that is becoming more and more apparent in all hygienically civilised countries A high level of general health, as shown by a low death rate and an outstandingly low infant mortality rate, is coexistent with a high rate of maternal mortality That part of the maternal mortality rate which is due to sepsis is made up of a falling rate from septicæmia following childbirth and a rising rate from septicæmia following abortion. In 1930 the graphs of these two rates intersected and in the five year period 1931–35, 176 women died from sepsis following abortion as compared with 70 who died from sepsis following full time childbirth Confronted with these figures, the Government set up a special committee in August, 1936, to inquire into the incidence, causes, and means of prevention of septic abortion in New Zealand Their report has now been published [1]

The Committee estimate that 20 per cent of all pregnancies in New Zealand end in abortion, and of this 20 per cent less than 7 per cent are spontaneous The criminal abortion rate is, therefore, about 13 per cent No estimate of the incidence of abortion exists for England and Wales, the recent investigators on maternal mortality having found the task too difficult,[2] but Beckwith Whitehouse stated some years ago that 3000 patients attending a gynæcological clinic in Birmingham showed a total abortion rate of 21 per cent [3] which corresponds closely with the New Zealand rate

Discussing the underlying causes of abortion in New Zealand, the committee recommend in the first place that economic hardship should be dealt with by a direct children's allowance, which can be done by extending the provisions of the present Family Allowances Act They also suggest the provision of domestic help with financial assistance Fear of childbirth was not thought to be an important factor Both in the unmarried and the married "failed contraception" was held to be a frequent cause of abortion, the unreliability of contraceptive methods and the risks of abortion being insufficiently recognised The sale or distribution of contraceptives should be restricted entirely to registered practising chemists, doctors, hospital departments, or clinics, their sale by other persons being subject to severe penalty, and the committee also recommend that the advertising and sale of drugs euphemistically described as for the "correction of women's ailments" or "correction of irregularities" should be forbidden Some types of "corrective" pills were analysed and found, of course, to be ineffective and in some cases harmful the profit on their sale was "at least 900 per cent" A recommendation of more dubious value was to prohibit the sale of surgical instruments which can be used for the purpose of procuring abortions, such as catheters, bougies, and sea tangle tents except on the prescription of a medical practitioner

Finally, the committee lay stress on changes in social outlook and suggest an educational campaign against "race suicide" This is dangerous ground Even if it is fair to describe a falling birth rate by the catch phrase "race suicide" it has been shown in many countries that neither propaganda, threats, nor monetary rewards will do more than temporarily arrest the downward trend of a birth rate A falling birth rate, contraception, abortion, and a high maternal mortality rate appear to be among the penalties paid for advancing civilisation As life becomes increasingly worth living, we become more and more reluctant to let our children live it

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[1] Report of the Committee of Inquiry into the various aspects of the problem of abortion in New Zealand G H Loney Govt Printer Wellington 1937

[2] Ministry of Health Report on an investigation into Maternal Mortality Pp 196 and 221 London 1937

[3] *Proc R Soc Med* 1930, 23 241

SULPHANILAMIDE IN URINARY INFECTIONS

THE possible usefulness of sulphanilamide in other than hæmolytic streptococcal infections is being investigated in two ways, by laboratory experiment and by clinical trial. Experiment has shown that other species of bacteria are susceptible to its action, and these include *Bact typhosum*, it is therefore in accordance with expectation that at least some bacteria of the intestinal group should be vulnerable in clinical practice Doubtless because the original Prontosil was obviously excreted in the urine, attempts to treat urinary infections with it were made, especially in Germany, before anything was known of its action, under experimental conditions, on the bacteria concerned, and these attempts met with success Now that the mode of action of prontosil is known, and studies of its active derivative, sulphanilamide, have shown that it is excreted, largely in an active and bactericidal form, in the urine, there is every reason for undertaking the serious study of this drug as a urinary antiseptic. Such a study is reported by Dr Meave Kenny and her colleagues in our present issue They report uniform success in the treatment of 46 cases of *Bact coli* infection of the urinary tract, 16 of which were cases of pyelitis of pregnancy, the urine becoming free from pus and bacteria and all symptoms being entirely relieved, usually within three or four days The only failures have been in infections by organisms other than *Bact coli* The advantages of the treatment, apart from its rapid and uniform effect, are the relative cheapness of the drug and the absence of the nausea and digestive disturbance often caused by mandelic acid and ammonium chloride, especially in pregnant women It is interesting that, in spite of the regularity of sterilisation of the urinary tract, in vitro tests by no means always gave corresponding results, the bactericidal power of urine from patients under treatment varied, and the susceptibility to this action of different strains of *Bact coli* also varied considerably, some being entirely resistant in vitro though in vivo they succumbed to the action of the drug A similar study has recently been made by Helmholtz [1] with somewhat different results, he found sulphanilamide urine fully bactericidal to each of three strains of *Bact coli* and *Bact lactis aerogenes*, but variable in its action on different strains of cocci and *Proteus vulgaris* This puzzling discrepancy between in vitro and in vivo results will fortify the suspicion that the action of sulphanilamide in the body may not after all be directly bactericidal and nothing else

In Germany the original prontosil is still being used a good deal, and the rapid advances for which French and English workers have been responsible seem not to be generally known Weiser [2] reports treating a series of cases of urinary infection with prontosil with apparently uniform success and these were mainly of quite a different nature from the cases treated by Dr Kenny. They were chiefly chronic infections some in elderly subjects with prostatic obstruction or a history of calculus and most of the infections were mixed or coccal. The evidence furnished by this paper is not conclusive but it does suggest that some urinary tract bacteria other than *Bact. coli* may be exterminable by these drugs.

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[1] Helmholtz H F *Proc Mayo Clin* 1937, 12 244

[2] Weiser A., *Med Klin* May 14th 1937 p 674

CANCER IN THE GREAT CITIES OF THE WORLD

In the hope that statistical inquiries into the mortality from cancer might be clarified by a world wide survey of its incidence the International Statistical Institute, at its meeting in Mexico in 1933 appointed a committee to make such a survey. The task was entrusted to Dr Wilhelm Böhmert who has now issued his report[1]. In view of the greater inaccuracies in the mortality records of sparsely populated areas he has confined his attention to the large cities of the world. For such he has obtained and tabulated recent population figures by age and sex and the corresponding number of deaths attributed to cancer in general and in different sites. Thirty three countries in all parts of the world are represented and the cities included contain a population of more than 140 millions. A very large amount of material is thus presented in a convenient form. Having paid attention to the various sources of error that may complicate interpretation of these figures Böhmert calculates the death rates from cancer experienced in different cities at ages over 40 and in the age group 40–60. In total there is no very pronounced difference in any part of the world between the male and female mortality rates. Division by ages show fairly generally higher rates amongst females up to about ages 50–60 and higher rates amongst males after age 60. The total death rates from cancer at ages 40 and over vary between roughly 65 per 10 000 in New Zealand 40 in the Netherlands a little below 40 in Great Britain, 30 in Japan and less than 10 in Egypt and India. Such differences apart from other errors may clearly be due in part to differences in the age-constitutions of the populations concerned for over 40 years of age is a very wide group where cancer is concerned. Division by site—taking the number of deaths attributed to each site as a percentage of the total cancer deaths—also reveals very wide differences. For instance the proportion of deaths attributed to cancer of the digestive organs is highest in Japan largely a vegetarian country and relatively low in the meat eating Anglo Saxon populations in different parts of the world. On the other hand cancer of the breast is comparatively common among the English speaking populations and rare in Japan where cancer of the uterus appears to be considerably more important. The progression of the relative importance of each site with age does not vary materially in different parts of the world.

Böhmert also inquired how far information was collected in different countries regarding the social and other characteristics of persons suffering from cancer. Only in one or two countries had this type of investigation been undertaken and he concludes that it would be advantageous to extend it. He would like to see a questionnaire completed for each cancer patient giving the incidence of cancer on the immediate relatives, the occupation of the patient, his social status, and other particulars. The accumulated material thus obtained would be analysed officially on comparable lines in each country.

TUBERCLE BACILLI IN STOMACH WASHINGS

Estimates *of the comparative importance of the* clinician the bacteriologist, and the radiologist in the detection of early pulmonary tuberculosis are apt to vary widely if not wildly. Although the clinician keeps coming back into his own, it cannot be denied that he and his stethoscope have lately been pushed a little into the background by the growing prestige of the radiologist. This prestige however should suffer a check from investigations conducted at the Öresund Hospital in Denmark by Dr Ulf Gad[1] who has made a bacteriological examination of the contents of the stomachs of 271 patients whose radiological reports as far as their lungs were concerned, had been reassuringly negative. In as many as 34 cases or 12·5 per cent. irrigation of the stomach on two successive mornings with 300 c.cm of water yielded a fluid in which tubercle bacilli were found. In 97 of the 271 cases the patients had been admitted to hospital for observation despite a negative radiological report because they had signs and symptoms that made them suspect and in 11 of these cases tubercle bacilli were found in the stomach. Another group consisted of 75 patients who suffered from pleurisy and tubercle bacilli were found in the stomachs of 12 of these. The only group in which the stomach pump and radiological tests agreed consisted of 23 patients representing almost as many different diseases which ranged from undulating fever to pulmonary infarct. In none of them could tubercle bacilli be found by gastric lavage although this group contained cases of erythema nodosum spontaneous pneumothorax empyema, and bronchitis. It should be noted that all Dr Gad's 271 patients were adults and that hitherto most of the publications on the diagnosis of pulmonary tuberculosis by gastric lavage and bacteriological examination have concerned children who are more likely to swallow all their sputum. But evidently the usefulness of the stomach pump test is far from negligible in adults and we are likely to hear more of it in the future as a corrective to the interpretations set on shadows by the radiologist and on sounds by the clinician.

THE HOSPITAL GUIDE

The man in the street perhaps knows the names of a dozen London voluntary hospitals. A general practitioner may know the names of 50. Few people can realise that there are 145 voluntary hospitals in London. The Hospital Guide issued by the Hospital Saving Association[2] sets out particulars of all these and shows their scope. It should be valuable to every medical man who has to send patients to hospital, for it will probably inform him of facilities for special nursing and treatment of which he had never heard, and it gives hours of attendance. Another list sets out particulars of the hospitals with pay bed accommodation which meets the need of patients who do not wish to compete for admission to the ordinary wards and are willing to pay a higher fee for more privacy and perhaps better accommodation. There is also a list of convalescent homes of spas and seaside resorts and of district nursing associations. The contributory scheme of the Hospital Saving Association is its chief activity and the Guide sets out in full the means by which any person can join a group or become an individual contributor and pay 3*d* a week, in return for which he receives a great many benefits When a contributor is accepted for treatment by one of the hospitals in the scheme, his means are not inquired into and he pays nothing as an in patient in an ordinary ward or as an out patient At other hospitals he is reimbursed, with certain limitations, the normal payments which he has been called on to make, up to a period of ten weeks Many municipal hospitals will also accept the Association's green voucher for a period not exceeding ten weeks The fund also gives assistance towards the cost of dental treatment and dentures, convalescent treatment, surgical appliances, glasses, and ambulance service The Guide gives full information about these and other facilities, including the National Eye Service centres administered by the National Ophthalmic Treatment Board the Voluntary Hospitals Ophthalmic Clinics Scheme, and the King Edward's Hospital Fund for London. It also contains articles on auxiliary medical services, public medical services, the provision of institutional treatment through contributory and provident schemes, and medical psychology

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[1] Untersuchung über die Todesfälle an Krebs in den grossen Städten der Welt. By W. Böhmert. International Statistical Institute 2 Oostduinlaan The Hague Holland. 1937. Pp 71. 1·50 florin.

[1] *Nord med Tidskr* May 22nd 1937 p 815.

[2] London 30 Lancaster gate W.2. 3d.

FŒTAL MALFORMATIONS

ACCURATE information about the causation of fœtal deformities is still badly needed, and Mr Percy Malpas's valuable study [1] of them is correspondingly welcome His material consists of 294 cases of malformation occurring among 13,964 consecutive births in the Liverpool Maternity Hospital during the decade 1923–32 Additional particulars relating to the malformed offspring were obtained by means of a questionnaire sent to the parents asking for information about the age of the father, the existence of parental consanguinity, and the condition of any later children Only 109 replies, however, were received from the parents of the 294 malformed children, and clearly this sample may not be representative of the total The total incidence of malformations among these children born in hospital was, it will be noted, 2 1 per cent, or, roughly, 1 in 50 births Just over half these malformations were cerebro spinal—58 hydrocephalus, 44 anencephalus, 39 spina bifida, and 8 *iniencephalus* In the group labelled general the largest contributors were club foot, mongolism, hare lip and cleft palate, hypospadias, and malformed arms or hands Division of the total births by age of mother enables the incidence of malformations to be assessed at different maternal ages Anencephalus, hydrocephalus, mongolian idiocy, and possibly congenital cardiac diseases and hare lip and cleft palate are found to be more frequent at the older maternal ages The other conditions, including spina bifida, show no clear relationship to the age of the mother There was no evidence that disparity between the ages of the parents was of any significance Clearly the greater frequency of certain conditions at older maternal ages may be a function of birth order rather than of the age of the mother The data do not allow investigation of the place of the affected children in their completed fraternities, and in place of it a cruder method has to be employed—namely, a comparison of the proportions of multiparæ and primiparæ among the total births and among the affected children Although those conditions that show an increase with maternal age all show some excess of multiparous mothers the differences are relatively small Malpas concludes that parity does not modify the incidence of malformations other than hypospadias, which is commoner in first born children There was, however, a suggestion in the figures that hydrocephalus tends to be commoner in the children of primiparæ and of women who have borne more than some seven children With anencephalus, hydrocephalus, and spina bifida the clinical histories of the mothers showed higher proportions of abortions, stillbirths, or neonatal deaths than were found in the total population—a result which Malpas takes to be indicative to some extent of poor general maternal physique The importance of these relationships lies, he thinks, in the evidence they afford of environmental rather than hereditary influences Before their significance can be established one must consider whether the various types of human malformation represent the different manifestations of a common group of causes or arise from separate and individual causes After a review of the cases of multiple malformations and recurrent malformations recorded in this sample, and a discussion of the absence of parental consanguinity in those who replied to the questionnaire, Malpas concludes that all human malformations form a closely allied ætiological group In view of the preponderance of cerebro spinal malformations over other types, the causes of malformations in general are, he argues, to be sought for in the causes of abnormal nervous growth The earliest change, he suggests, may be a modification of the nutrition of the embryo, this leads to an abnormal development of the primitive vascular system and thus to an abnormal development of the nervous system This again results in failure in the orderly integration of the growth of the various parts of the body, an integration depending on the nervous system Thus the individual malformations of the various organs arise depending in their distribution on the situation of the abnormality in the nervous system

RATIONAL ENDOCRINOLOGY

OF all branches of medicine none in the past few years has attracted more interest or inspired more writing than endocrinology The result is that while the lay public is inclined to demand endocrine therapy, and manufacturers have been quick to respond, it is hard for practitioners to assess the value of the innumerable preparations marketed, and impossible for them to keep abreast of what is published. To meet this difficulty the *British Medical Journal* arranged a series of articles by authorities on the various aspects of endocrinology, and these are now republished in book form [1] The approach is essentially practical, but a sound balance has been maintained between theory and clinical application The editor of the *British Medical Journal* contributes a preface, setting out briefly the objects of the series, and the present position and history of endocrinology are dealt with by Sir Walter Langdon Brown and Sir Humphry Rolleston respectively Six articles are directly concerned with the pituitary, six with the thyroid, three with the adrenals, and two with the parathyroids Other subjects considered in detail include pregnancy, the menopause, menstrual disorders, male hormones, and the thymus and pineal glands Altogether, 24 authorities have contributed. The value of a book of this kind hardly requires emphasis and very many readers of the *British Medical Journal* must have looked forward to acquiring this series of articles in a more permanent form The reader's most immediate reaction will probably be one of horror when he considers the amount of money wasted by the prescription of endocrine preparations by mouth which are completely inactive thus given If the only function of the book were to bring this home to the medical profession it would serve a useful purpose; but it also provides definite guidance towards rational endocrine therapy and gives cause for optimism to the most cynical.

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[1] *J Obstet Gynæc* June 1937 p 434

[1] The Endocrines in Theory and Practice Articles republished from the British Medical Journal London H K. Lewis and Co 1937 Pp 278 9s

TUBERCULOSIS IN INDIA

THE April number of the *Indian Medical Gazette* is devoted to tuberculosis In an editorial article it is pointed out that the disease is by no means a recent arrival in India but one that has claimed victims for many centuries (2 at least it is believed) To day however it appears to be spreading rapidly and has become a problem of public rather than individual health. The claim is made that the soil on which the tubercle bacillus is implanted in India is entirely different from that anywhere else in the world though this claim is somewhat modified later on. A set of environmental factors of importance in the West are not necessarily of equal importance in the East and a public demand for sanatoriums and dispensaries, and all the paraphernalia of Western anti tuberculosis measures though well meaning is not necessarily well advised The alternatives are not clear but a plea is made for organised search both in the field and in the laboratory for the best methods of combating the disease, and the signed articles in this special number form a useful contribution to the subject Dr A C Ukil states that tuberculosis is not yet notifiable in the rural areas of India, whilst the registration of deaths is sufficiently defective for many fatal cases of the disease to pass unrecognised Public health work is therefore beset with difficulties. Nevertheless, the results of sanatorium treatment recorded in another paper by Dr Fremodt-Moller at the Union Mission Sanatorium, show that good results are obtainable with modern methods in India just as in Europe Other contributions too give evidence of alertness in the modern treatment of the disease

THE TIME-RELATIONS OF CARDIAC ENLARGEMENT

RADIOGRAPHY is useful both to establish the presence of heart disease and to reveal its cause. Studies to this end have been concerned more with statics than dynamics and the changing appearances in the course of cardiac disorders are not well known. Dr Palmer[1] however has now succeeded in collecting data on the progressive changes in the heart's size over long periods in a variety of conditions. According to current belief enlargement depends chiefly on two factors—first the work that the heart is called upon to do and secondly its capacity for doing it. The capacity to perform work is affected by many different kinds of injury to the myocardium especially ischæmia and chronic inflammation but apart from these a hypertrophied myocardium seems to become fatigued and inefficient in a way not well understood. There are probably other factors that contribute to enlargement and Dr Palmer suggests that age is one of them for a given disorder more readily produces enlargement in the young than in the old. Congestive failure is attended by some increase in the heart's size (though the increase is more apparent than real) and this is a consequence largely of changes in the auricles On the other hand, no evidence is forthcoming in support of ' acute dilatation which still awaits radiological proof Dr Palmer however draws attention to rapid local increase in the size of the left ventricle, which if it occurs within a few months and without distinct aggravation of symptoms means cardiac aneurysm It is to be noted that an increase in the cardiac shadow is referred to as enlargement simply and no attempt is made to distinguish between hypertrophy and dilatation This is in accordance with opinion nowadays held that there is no such thing as acute enlargement and that the magnitude of the two components of enlargement are hard to assess Though there are considerable local enlargements which are obvious exceptions to this rule differentiation when attempted is usually based more on inference from the history and symptoms than on the physical signs Dr Palmer's report throws light on a neglected aspect of cardiology, and at the same time shows where further work should be done.

OBJECTS OF SURGICAL ART

THE museum of the Royal College of Surgeons contains a great many surgical instruments and of late years the honorary curator of the historical collection has endeavoured to preserve as a memorial to eminent surgeons specimens of instruments which they originated and which are known by their names To the collections thus gathered has now been added a number of the instruments invented and used by the late Lord Moynihan which have been presented by his son. Another important addition to this section are examples of many interesting patterns of instruments and appliances made by the firm of Down Bros over a quarter of a century ago Most of these are now becoming obsolete, for (as the donor points out) very few instruments now remain unchanged for twenty five years This large assemblage also serves to show the gradual obsolescence of certain operations and affords material for study by surgeons who are proposing to design new instruments. By the kindness of Dr R J Probyn Williams, the already fine collection illustrating the history of anæsthetic apparatus has been enlarged by a number of pieces dating from 1895 to 1908 The include the original model made for Paterson's nasal gas apparatus and the original model of the ether inhaler devised by the donor

The history of the head-saw has now been worked out by the honorary curator and the result is shown in a series of these instruments now mounted documented, and chronologically arranged in the instrument room The earliest representation of the head saw is that figured in a manuscript of the eleventh century by Albucasis In the fourteenth century there is a drawing of one in the MS of William of Parma that belonged to John Wryghtson of Oxford from which a model has been made. In the sixteenth century Andreas Della Croce depicts several with blades of varied shape After the seventeenth the head saw went out of use until its employment was revived by Cockell about 1783 Cockell devised several instruments with different shaped blades and six of those he originally used are included in the collection. In 1803 the use of the head-saw was again advocated by William Hey

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[1] Palmer J H Development of Cardiac Enlargement in Disease of the Heart, a Radiological Study; *Spec Rep Ser med Res Coun.* No [illegible] H M Stationery Office Pp. 43 1s.

F R S , of Leeds, and in this way it became associated with his name, being still known as Hey's saw

A unique gift to the historical collection comes from the collection of Mr C S M. Bompas It is the original cabinet made for the late Frank Buckland, F R S , to hold the bones and remains of John Hunter, which he discovered after an arduous search in a vault in the crypt of St Martin in the Fields in 1859 These remains, as is well known, were afterwards interred in Westminster Abbey

CHEAP MILK FOR MOTHERS AND CHILDREN

THE Children's Minimum Council are submitting to the Ministry of Health a memorandum on the provision of cheap milk for mothers and pre-school children In November, 1935, a Government spokesman said he hoped soon to be able "to announce a policy under which the cheap milk scheme for school children will be extended to expectant mothers and children under five " Since then the need for such a policy has been repeatedly urged At present prices it is impossible for many working class families to buy the amount of milk recommended by the Ministry of Health's advisory committee on nutrition , and though about 7 million gallons (including dried milk) are distributed annually through maternity and child welfare centres, this amounts to a pint a day for only about 150,000 persons , whereas, " the number of children under five and of nursing or expectant mothers of the same social status as the elementary school population in England and Wales is estimated at about 3 millions " The Children's Minimum Council propose that milk should be made available at 1½*d* a pint for all expectant and nursing mothers and children under school age in families where the chief wage-earner is covered by National Health Insurance or is of equivalent economic status , and that the amount should be up to two pints a day for the mother and a pint for the child How this is to be done is set forth in their memorandum, which is obtainable at 6*d* from 72, Horseferry road, London, S W 1

TOXIC GASES

DESPITE recurring fatalities in places where sewage gas has accumulated the poisonous nature of sulphuretted hydrogen is not widely recognised Inhalation of air containing H_2S in the proportion of one part in a thousand will cause rapid unconsciousness, resulting in death unless artificial respiration is applied forthwith In this concentration hydrogen sulphide is in fact nearly as toxic as hydrogen cyanide, and may paralyse the respiratory centre with equal rapidity One part in two thousand causes severe irritation of the eyes, and if inhaled for more than 15 minutes may fatally injure the lungs , one in five thousand is equally dangerous if inhaled for an hour, and even one in ten thousand will cause symptoms of conjunctival and respiratory irritation , one in thirty thousand is not harmless over long periods It is appropriate then that sulphuretted hydrogen should come first in a series of leaflets describing standard methods of detecting toxic gases in industry [1] The recommended test with lead acetate paper is sensitive to one part in 150 thousand, a degree of sensitivity not too high in view of what has been set out Dr J S Owens's recent reminder that the human adult consumes in a day about 2 7 pounds of dry food, 4 5 pounds of water, and 30 pounds of air illustrates what opportunities exist for absorption of impurities in air A definite procedure is laid down, the air to be tested being drawn through the prepared paper by means of a hand pump, and the stain, if any, produced by one, two, three or five strokes of the piston compared with a set of standard stains These have been reproduced in colour on a printed slip enclosed in a pocket in the cover and the cost of this slip is responsible for the high price of the leaflet Sulphuretted hydrogen may be encountered in various industries, especially artificial silk works, chemical and dyeing works, coke oven and by product plants, gas works, grease and petroleum refining, tar distillation, and sewage works A system of testing air at intervals in the London main drainage system has been in use for some years This leaflet is the first instalment of a series dealing with the toxicity of various atmospheres which men may have to enter The available literature on the subject is scattered and much of it is contradictory Each test now given has been standardised in the laboratory of the Chemical Defence Research Department and tested under working conditions with the coöperation and financial aid of the Association of British Chemical Manufacturers The reckless use of the gas in chemical laboratories has led students to consider it relatively harmless and this leaflet does well to correct the wrong impression generally received

THE EDITORSHIP OF "THE LANCET"

THE Proprietors of THE LANCET have appointed Dr Egbert Morland as editor in succession to the late Sir Squire Sprigge Dr T F Fox and Dr M H Kettle have been appointed assistant editors

THE King has approved the grant to the Institute of Hygiene of a supplemental royal charter giving it power to amalgamate with the Royal Institute of Public Health. The amalgamated bodies will be known as the Royal Institute of Public Health and Hygiene Their manifold activities have hitherto been supplementary though directed to the same end, and the amalgamation will, it is hoped, make for enhanced usefulness in the cause of national health

THE air-raid precautions department of the Home Office last week issued two memoranda to local authorities The first, which deals with compensation in the unlikely event of injury to a student attending the Civilian Anti gas School, mentions that over 1200 have already passed through this school The second points out that the time has come to expand and elaborate the arrangements for local anti gas training, which has often been held up because officials who have attended the school are not released from their normal duties in order to hand on the instruction received " The bottle neck in anti gas training is the limited number of qualified instructors " Syllabuses for local courses are given, five being recognised, as follows full course (about 20 hours), medical course (12 hours), voluntary aid course (10 hours), short course (5 hours), and short decontamination course (2–3 hours) It is suggested that members of the public not undertaking special service should be given a single lecture of an hour, or if desired a course of four or five The memoranda are to be had from H M Stationery Office at 1*d* and 3*d*

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[1] Department of Scientific and Industrial Research Methods for the Detection of Toxic Gases in Industry Leaflet No 1 Hydrogen Sulphide H M Stationery Office 3*s* 6*d*

SPECIAL ARTICLES

THE ADEQUACY OF COMMERCIAL PASTEURISATION FOR DESTRUCTION OF TUBERCLE BACILLI

By E Humphriss A I C
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Although earlier publications provided contradictory evidence as to the effectiveness of the holder pasteurising process for the complete destruction of tubercle bacilli in milk, the paper of North and Park (1927) made it very clear that exposure to a temperature of 145 –150 F for thirty minutes affords an ample margin of safety both as regards time and temperature It is however quite evident that if pasteurisation on the commercial scale is to be entirely satisfactory it must be carefully conducted and adequately supervised (Dalrymple-Champneys 1935) Those who will have to decide the question as to whether compulsory pasteurisation is to be adopted will require to satisfy themselves that the risks of bulking can be completely removed by the commercial processes in common use

While a great amount of testing of individual samples and of the working of individual plants must have been done at one time or another very few reports of such work have found their way into readily available literature The report of the Department of Health for Scotland on tuberculous infection in milk (Report (1) 1933) records that 35 out of 1243 samples of milk heat treated by the holder process contained tubercle bacilli Most of these could be traced to plants of a particular type or inefficient handling Traum and Hart (1916) in California record observations upon the commercial pasteurisation of 24 samples of milk from a large herd which was composed of animals segregated because of positive tuberculin reactions The milk of the herd constantly contained tubercle bacilli when in the raw state but not one of the samples examined after pasteurisation contained enough tubercle bacilli to infect a guinea pig Pullinger (1934) took 63 specimens of milk from the inlet pipes of 7 different pasteurising plants and found all of these to contain tubercle bacilli Samples collected 45 minutes later from the outlet pipes contained none Beusch (1935) has recently reported that 50 per cent of the samples of raw milk received at the Leipzig central milk station contain tubercle bacilli but none were found after pasteurisation No statement of the number of samples is given

In view of the paucity of published work on the efficiency of commercial pasteurisation we have thought it worth while to place on record experience we have been able to gain during the past two years

METHOD OF EXAMINATION EMPLOYED

The method of examination we have employed has been to centrifuge 80 c cm of milk for 20 minutes at about 3000 revolutions per minute and inoculate half of the deposit taken up in a small amount of saline intramuscularly into each of two guinea pigs After the third week both animals were examined weekly for enlarged glands in the groin and if these were found one animal was killed and thoroughly examined macroscopically and bacilli sought microscopically If these were present the other animal was also killed and examined if not the survivor was watched for a further period If no clinical changes could be detected the animals were kept for eight weeks and then killed and examined We have found the use of two animals indispensable but are doubtful if it is generally necessary to delay examination beyond six weeks We have not made use of cultural methods at all.

EXPERIENCE WITH HEAT TREATED MILK SUPPLIED TO SCHOOL-CHILDREN

In 1934 the Liverpool authorities on the advice of the medical officer of health, decided that milk supplied to school-children should be heat treated, as required for pasteurisation in installations approved and inspected by the medical officer of health. The number of approved suppliers of school milk was 17 in 1935 and 14 in 1936 Some of them are licensed to sell pasteurised milk under the grading scheme but many are not The milk therefore should be termed "heat treated and the inspection carried out has been such as to ensure that the heat treatment did in fact consist of exposure to a temperature of 145 –150 F for 30 minutes.

In 1935 and 1936 we examined altogether 440 samples In not one instance were we able to demonstrate the presence of living tubercle bacilli. It is evident that the methods employed in the numerous plants concerned were quite adequate for their purpose That the result was not due to absence of tubercle bacilli in the Liverpool raw milk is shown by the fact that we were able to demonstrate these organisms in 233 out of 2402 ordinary samples taken from the city supply during the same period We feel fairly certain that the excellent result in this series is very largely due to the strict supervision of the plants by the staff of the medical officer of health who were able to provide against errors of technique before they had become serious (Report (2) 1936)

EXPERIENCE OF THE WORKING OF A PARTICULAR PLANT OVER A PERIOD OF ONE YEAR

At the request of Dr B T J Glover senior assistant medical officer of health and with the kind and willing coöperation of one of the large distributing firms of the city we have been able to investigate the efficiency of a modern plant over a period of approximately one year The plant in question is excellently installed in an up-to-date and exceedingly well-conducted establishment It is a modern example of a well known vacuum pressure type of apparatus with four separate aluminium holders each of 130 gallons capacity The raw milk passes through a heat exchanger and enters the holder at a temperature of 148 F and the pasteurised milk leaves it at 146°–149·5° Thermographic records both on the entry and on the exit lines, of the whole of each day's run have been carefully examined and show that the temperature was always between 145° and 150 F The thermographs have been frequently checked against standard N P L. thermo meters Each holder vessel required 17 minutes to fill and 15 minutes to empty, and the holding-time has been regularly 30 minutes Filling, emptying, and holding are mechanically controlled and the temperature of input is regulated by a thermostat We are satisfied that the heat treatment completely satisfied the requirements for pasteurised milk

On two days in each week specimens were collected in such a way as to provide a fair average sample of the whole of the milk treated during that day Two dripping devices were inserted, one into the inlet pipe line prior to heating and the other into the outlet line between the heat-exchanger and the storage tank Continuous slow dripping from these devices *throughout the whole or the greater part of the run* thus provided two fair and representative samples, one of raw and one of pasteurised milk, which were received in sterile vessels stored in the cold overnight, and examined next morning The volume of each sample was about one quart

The observations extended from Feb 11th, 1936, to Feb 26th, 1937 Altogether 102 samples of raw and a corresponding number of pasteurised milk were examined The general results were as given in Table I

TABLE I

—	No examined	Tubercle bacilli found		Tubercle bacilli not found	
		No	Per cent.	No	Per cent
Raw milk	102	61	59 8	41	40 2
Pasteurised milk	102	0	—	102	100

From 59 8 per cent of the raw samples we were able to obtain tubercle bacilli but not a single sample of pasteurised milk contained enough of these organisms to infect a guinea pig

It is generally recognised that the percentage incidence of tubercle bacilli in milk varies directly with the bulk of the sample from which the specimen is obtained In this series the smallest volume treated on any one day was 639 gallons and the largest 1749 Table II gives a summary of findings in this connexion

TABLE II

Volume treated	No	Tb +	Tb −	%Tb +
Over 1500 gallons	11	8	3	72 7
1250–1500 "	9	8	1	88 8
1000–1250 "	21	19	2	90·0
750–1000 "	31	19	12	61 3
Less than 750 gallons	30	7	23	23 3
—	102	61	41	59 8

The bulk of milk samples was, however, not the only factor involved The raw milk was obtained from two different sources and the proportions varied from day to day We have clear evidence that milk from one of these sources was much more regularly infected with tubercle bacilli than that from the other It so happens that 18 out of the 30 samples of less than 750 gallons came from this source and all were free of tubercle bacilli

It seemed just possible that the use of our special sampling device might have led to an exaggeration of the frequency of infection of raw milk and that the organisms might have persisted in the inlet pipe from previous samples As the whole apparatus was steam-sterilised this seemed improbable but we have tested the point On each of 10 days drip samples of the water used to wash out the sterile plant before allowing milk to enter were collected in the usual way Thereafter the raw milk and pasteurised milk were sampled and all three individually examined for tubercle bacilli by guinea-pig inoculation None of the 10 samples of wash water or of pasteurised milk contained them, but 6 of the 10 specimens of raw milk produced tuberculous infection It is clear that the organisms were in the milk and not imparted to it by the plant Ordinary bacterial counts and estimations of *B coli* content showed that the whole plant was to all intents and purposes sterile before use

DISCUSSION

The results of these two investigations call for little comment They agree in indicating that under ordinary commercial conditions properly run and adequately supervised, pasteurisation is a completely effective process The position as regards tuberculous milk in Liverpool is probably no worse than that in other cities of similar size in this country Probably not less than 10 per cent of our ordinary milk samples contain tubercle bacilli and where bulking occurs the incidence is many times greater Merely to state the existence of such a danger to health is to demand that it shall be removed Pasteurisation is clearly an effective remedy which needs careful supervision, implying activity on the part of the health authorities, and can be readily checked with the aid of the phosphatase test (Kay and Graham 1933) Surely it is high time that local authorities had the power to remove these dangers if they so desire It is of course evident that milk may be dangerously contaminated after pasteurisation and complete safety requires proper arrangements for bottling and distribution These are an almost inevitable appendage to a properly equipped pasteurising plant

SUMMARY

Of 440 samples of "school milk," heat treated in commercial plants as required for pasteurisation, none contained tubercle bacilli

All of the 102 samples of pasteurised milk collected from a single plant in the course of a year were free from tubercle bacilli although these organisms were present in 61 of the corresponding raw samples

We are indebted to Dr V Glass and Dr H R Shone for the necessary animal inoculations in this investigation

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NURSING ASSOCIATIONS —Princess Beatrice presided on July 8th over the annual meeting of the Overseas Nursing Association In presenting the report Lord Athlone said that they had now nearly 700 nurses serving overseas He referred to the excellent openings for nurses under colonial governments —On July 7th Lord Athlone presided at a meeting of the council of the Queen's Institute of District Nurses when it was stated that the nurses had paid over a million visits during last year Fifty-eight nursing associations had become affiliated with the institute since last March

THE TUBERCULOSIS CONFERENCE

THE twenty third annual conference of the National Association for the Prevention of Tuberculosis was held in Bristol from July 1st to 3rd Sir ROBERT PHILIP (chairman of council and president of the conference) was unfortunately absent through illness.

PROPAGANDA AGAINST TUBERCULOSIS

The subject of the first discussion was propaganda and publicity methods. Dr HARLEY WILLIAMS (medical commissioner of the association) described propaganda as the science of goodwill: it removes suspicion and fear and it teaches tuberculous patients their friends and relatives to face the disease to overcome despair and make terms with the inevitable. The three facts to be made clear were that tuberculosis is not inherited and is therefore an avoidable disease that it falls with most gravity on the young and the adolescent and that it is curable under the national scheme The criteria of success in propaganda were better notification increased attendance at dispensaries more contact examinations and a lower death rate

Dr VERONICA DAWKINS (resident medical officer East Anglian Sanatorium) said that of the young women entering a sanatorium more than half did not remember having been taught anything about health or tuberculosis No doubt much had been forgotten but it was clear that full advantage has not been taken of the only way in which *systematic* study on this subject can reach the individual—i.e. via the schools both elementary and higher The raising of the school age to 15 in 1939 should bring better opportunities for instruction and these opportunities must not be missed through lack of foresight and organisation There was still so great a horror of tuberculosis that young people were often unwilling even to approach the subject, and propaganda must therefore be conscientious and reassuring Sanatorium patients were potential propagandists and the coöperation of general practitioners must be sought untiringly

Mr P S RANKINE (secretary of the Central Council for Health Education) described steps to be taken in next winter s national campaign to bring the social services more to the knowledge of the people. The turn of the social hygiene and tuberculosis services was to come in February and March 1938 and in the tuberculosis campaign the emphasis would be placed on the tuberculosis dispensary as being the point of contact between the service and the public The aim of propaganda should be not merely to convey information to the ignorant but to overcome obstacles in the mind of the prejudiced. Much could be done through what advertisers called existing audiences —namely those who met regularly as women s institutes, mothers unions, British Legion clubs, church and chapel organisations political clubs sports associations and the like The aggregate of such audiences was estimated at about 16 000 000 and the familiar surroundings of a regular meeting place provided the best possible psychological background for propaganda. The film had become an essential part of any public health meeting and cinema proprietors would often coöperate if official visits by members of the civic body were arranged Similarly local officials might speak to audiences gathered to listen collectively to radio broadcasts Whatever else was done however the poster remained an essential part of any propaganda campaign and its function was to be a constant reminder Propaganda in fact, must advance on all fronts or it could not advance at all.

ENVIRONMENT: THE OPEN AIR SCHOOL

Dr RALPH WILLIAMS (medical officer of the Board of Education) said that the great defects of civilised environment were confinement and lack of fresh air, often with bad housing and overcrowding The open air school afforded conditions that stimulate metabolism and eliminate the risk of droplet infection also providing rest. By educating the child and the public and by building up the child s nutrition it had a definite place in the prevention of tuberculosis.

Mr GEORGE WIDDOWS F R I B.A. spoke on the evolution of school design ending his paper with the words —

> For many many years I have written and spoken on these principles of ventilation, lighting and heating and at the time of my retirement I retire not altogether happy for I see schools still incorporating out-of-date things I see architects still designing schools on out-of date methods and I have yet to find in these days medical men with the enthusiasm of Dr George Reed and Dr Sydney Barwise

Mr NORMAN WHATLEY described conditions at a public school Clifton College, of which he is head master He said that of late years the quantity of the food given had been much increased and that the boys had more sleep My purely amateur opinion he added "is that this is probably at least as important as anything else The number of boys who put on weight in term time but lose it in the holidays bears this out and I cannot help wondering whether in the national campaign for physical fitness much more emphasis ought not to be put on sleep It is in sleep quite as much as in food that the boy of the educated classes has at present an advantage."

The need of rest was also emphasised by Dr N T K JORDAN (tuberculosis physician for Breconshire and Radnorshire) who described the work of Highland Moors a residential institution near Llandrindod Wells Among the present generation he said there is a definite lack of parental responsibility and a failure to realise the importance of sufficient rest to the growing organism. Regular periods for rest and exercise, proper time given to meals, and due regard to cleanliness, fresh air and bodily hygiene were habits which the open air school can inculcate in the child of to day and therefore the parent of to morrow

Dr J E WILSON (medical officer of health for Mansfield) had been impressed with the rapid deterioration often seen when a child returns home from a sanatorium Unfortunately not each pre-tuberculous child could go to an open air school. Many school-children lived in dread of the attendance officer and it was clear that insistence on each of them attaining a certain standard of knowledge at a certain age broke down entirely when poor health was at the root of unsatisfactory school attendance. It should be the aim of all schools added Dr Wilson, not only to provide the necessary instruction in paths of knowledge but also to establish a real appreciation of the healthy body—how this may be acquired and maintained. He expressed a hope that the beneficent effects of open-air education would react on the construction of the elementary school of the future.

NUTRITION

Dr J A NIXON (emeritus professor of medicine in the University of Bristol) said it would be a grave mistake to allow the idea to prevail that dietetic measures by themselves would prevent or cure tuberculosis Nevertheless it would be unwise to conclude that under feeding plays no part in determining failure of resistance to the infection In under fed patients arrest of active tuberculosis was not to be expected. As for the diet to be given, the large intake of fat insisted upon by the older physicians had a scientific justification because fat does not increase the volume of respiration to the same extent as protein or carbohydrate Increased weight was not always associated with improvement, but improvement in health would always lead to a gain in weight The amount of food given should be slightly more than the patient's calculated calorie requirement The younger the patient the greater proportionately was the protein and calorie requirement At least half the protein should be first class (animal) protein, and not less than half the total calories should be derived from carbohydrates

Dr P A. Galpin (tuberculosis officer for West Ham) had classified groups of children into fat shy, meat shy, and green shy A dislike of the protective foods was due either to swallowing of catarrhal products, eating sweets before dinner, mistaken parental methods of getting the child to eat, or bad methods of cooking The person who left out the protective foods, green vegetables, and fat was more likely to develop tuberculosis , and the open air school, by stimulating metabolism, cured faddiness and tended to establish healthy appetite Like Prof Nixon, he emphasised the importance of self selection

The same note was struck by Dr F M F Meixner (director of the Illinois Tuberculosis Association) who referred to the difficulties of open air treatment in the United States, where the winters have long periods of cold. He also spoke of the danger of cloying the appetite with too much milk and of the fatigue caused by excessive homework

THE TUBERCULOSIS DISPENSARY

The last discussion was devoted to the equipment and activities of the dispensary Dr Campbell Faill (tuberculosis officer for Bristol) described it as "the most important part of the tuberculosis scheme since it coördinated all the activities of the area, official or unofficial." He said that in Bristol he had the usual difficulty of persuading young adult contacts to attend for examination and he proposed in future—when any of them persistently refused to attend—to notify the panel doctor that they were contacts of a sputum positive case This would lead to more careful examination if the patient presented himself for any reason at all.

Other papers were read by Dr W T Munro (medical superintendent of the Fife and Kinross Joint Sanatorium), Dr Latimer Short (chief tuberculosis officer for Somerset), and Dr R Melville Hiley (tuberculosis officer for Glamorganshire) Dr Hiley said that, of the patients referred to the main dispensary at Pontypridd, 36 per cent proved to be suffering from tuberculosis requiring treatment while 64 per cent showed no sign of active disease He spoke of the importance of the patient's first visit to the dispensary —

> "On it I venture to think the ultimate prognosis in no small measure rests It is generally agreed that the temperament of the patient plays a great part in the treatment of the disease , without the whole hearted coöperation of the patient any and every form of treatment is likely to fail I feel that the extra half hour spent with each of these unfortunate sufferers, listening to their domestic difficulties and giving them a rough pathology of the disease—rough but convincing enough to impress upon them the necessity for carrying out that most difficult of all tasks, absolute rest—is time well spent It gives them a confidence and a hope which our subsequent treatment could not do itself, but which will prove a marvellous asset to us and to them in the long course we have to run "

Dr Hiley also maintained that the diagnosis and treatment of surgical tuberculosis should not be removed from the tuberculosis officer, for it was one of the most interesting branches of his work and served to stimulate his optimism During the past five years domiciliary treatment of tuberculosis of bones and joints had been started in Glamorganshire, and the results had convinced him that it could be successfully carried - out Indeed, with patients of a certain kind of temperament, the results were likely to be better than those achieved in institutions

The subject of this last session was chosen in celebration of the jubilee of the opening of the first British tuberculosis dispensary by Sir Robert Philip at Edinburgh in 1887

BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH

A meeting of the trustees of the Beit Memorial Fellowships for Medical Research was held on July 9th for the election of fellows and other business The trustees expressed their deep regret for the death at the close of last year of Sir Edwin Deller, who, since 1929, had given important help in his ex officio trusteeship as principal of the University of London He is succeeded in this appointment by Mr H L Eason

The trustees noted with pleasure the distinctions received by two members of the advisory board during the past year Prof J Ledingham, F R S , had received a knighthood, and Sir Henry Dale, F R S , was awarded a Nobel prize for medicine The honours gained by past fellows during the year include a K C B granted in the list at the King's Coronation to the present secretary of the Medical Research Council, Edward Mellanby, F R S (1910–12) J McMichael (1930–34) was elected to the Johnston and Lawrence research fellowship of the Royal Society The total number of fellowships held by full time workers during the year 1936–37 remained unchanged at 24

The following elections to fellowships were made —

Fourth Year Fellowships

Robert Percival Cook, B Sc Melb , Ph D Camb To continue his research on cholesterol metabolism in reference to the cause of atheroma in blood vessels At the Institute of Biochemistry, University of Cambridge

Stuart Lawson Cowan, B Sc Lond To continue his research on the neuromuscular transmission of nervous excitation At the department of pharmacology of University College, London

David Ezra Green, M Sc New York, Ph D Camb To continue his studies on intracellular enzymes and on the influence of vitamin B on oxidation processes At the Institute of Biochemistry, University of Cambridge

Maurice Jowett, D Sc , Ph D Liverp To continue his study of the action of narcotic drugs on the metabolism of the central nervous system At the biochemical laboratory at Cardiff City Mental Hospital

Junior Fellowships

Ian Alfred Anderson M B *Aberd* Carnegie research scholar, 1929 Gold medal for most distinguished graduate in medicine, 1933 Resident medical officer, Aberdeen Royal Infirmary, 1933 Rockefeller fellow, 1934 Proposed research: iron analyses of diets of women of the poorer classes at Aberdeen and studies on the treatment of anæmia At the metabolic research laboratory of the Aberdeen Royal Infirmary

Desmond Beall, B.A. British Columbia Ph D Toronto Research fellowships at Toronto 1932–35 Since 1935 attached to National Institute for Medical Research London Proposed research: sterol metabolism with special reference to sex hormones. At the department of pathology of the British Postgraduate Medical School London

James Cowans Chalmers B.Sc. Glasg A.I C Since 1933 biochemist to Glasgow Royal Cancer Hospital with research grant from British Empire Cancer Campaign Proposed research: the rôle of polycyclic hydrocarbons in experimental tumour production. At the Glasgow Royal Cancer Hospital

Frederick Colin Courtice B.Sc. Sydney D Phil Oxon Rhodes scholar 1933 Proposed research: the influence of insulin and endocrine secretions on the metabolism of prolonged muscular exercise At the Physiology Laboratory University of Oxford

Hugh Davson B Sc Lond Rockefeller fellow at Pennsylvania University 1936 Proposed research: the cause of primary chronic glaucoma of the eye At the department of physiology and biochemistry of University College London

Thaddeus Rudolph Robert Mann M.D Lwow Poland Ph.D Camb Rockefeller research fellow at Cambridge since 1935 Proposed research: on intracellular compounds of blood pigment and the metabolism of oxalic acid in mammalian tissues At the Molteno Institute University of Cambridge

Antoinette Pirie Ph.D Camb Research fellowship Newnham College Research grantee of Medical Research Council since 1934 Proposed research: the metabolism of filtrable organisms by analysis of their enzyme systems At the Institute of Biochemistry University of Cambridge

Derek Richter, B.Sc Oxon. D.Phil Munich Research grantee of Medical Research Council Proposed research: the action of adrenaline and related substances on the metabolism of individual organs. At the Institute of Biochemistry University of Cambridge

All correspondence of fellows and candidates should be addressed to Prof T R Elliott M.D F R S hon. secretary Belt Memorial Fellowships University College Hospital medical school University-street London W C.1

BUDAPEST

(FROM OUR OWN CORRESPONDENT)

NEW TREATMENT OF DIABETIC ACIDOSIS

A SENSATION has been caused here by the report of Prof A Szent Györgyi on his discovery that succinic acid is capable of stopping acidosis in diabetics. Prof Szent-Györgyi who holds the chair of medical chemistry at Szeged made his experimental study in collaboration with Dr Stephan Rusznyák director of the medical clinic there Competent authorities say that this is the greatest discovery in the domain of diabetes since the discovery of insulin by Banting and Best.

It was the study of the mechanism of biological oxidation that led to this latest discovery Investigations carried out at the Szeged institute by Laki and Banga have shown that the pyruvic acid is an important key to the intermediary metabolism of carbohydrates Another worker in the institute Ernest Annau discovered that the C_4-dicarboxylic acids play an important part in the dehydration of pyruvic acid The hydrogen split off from the pyruvic acid is taken up by the C_4 dicarboxylic acids If however these catalytic C_4 dicarboxylic acids for some reason cannot perform their function the oxidation of the pyruvic acid becomes disturbed and this takes up less than one atom of oxygen to every molecule the final product being acetone

These observations led Prof Szent Györgyi to assume that in diabetes also acetone is formed not from fats but from pyruvic acid which is thus the source of acetone and of those organic acids that lead to the state of acidosis This suggested that the cause of the ketosis of diabetes is a disturbance of the catalytic function of the C_4 dicarboxylic acids, which results in the formation of acetone and hydroxy butyric acid from pyruvic acid. There is no difficulty in supposing that there is this failure in the function of the C_4 dicarboxylic acids especially since there is only a very small quantity present in spite of its important rôle. It is easy to imagine that in diabetes this small quantity of dicarboxylic acid is formed with greater difficulty or decomposes more easily and thus the amount is deficient It is thus possible to remedy the disturbance of metabolism leading to acidosis by introducing dicarboxylic acids artificially Their total quantity in the adult person is only about 5 grammes From this Szent Györgyi concludes that this must be about the therapeutic dose In the experiments the very cheap C_4 dicarboxylic acid succinic acid was selected and these proved that diabetic acidosis can in fact be remedied by a relatively small dose. It has no direct action upon the hyperglycæmia for clearly the small quantity necessary cannot act here as a source of energy and the mechanism of its action is different from that of the antiketogenic substances formerly used.

So far 5 patients have been treated at Dr Andreas Korányi's clinic with very satisfactory results in every case but particularly in the following

> The patient had been under treatment for severe diabetes for many years and in spite of a strict diet and 70 units of insulin daily she had been admitted to the clinic several times with severe ketosis and verging on coma Although insulin was discontinued the severe acidosis ceased on giving succinic acid That this was not due to the rigid observance of the diet was proved by the fact that three days after ceasing to administer succinic acid acetone reappeared in the urine though the diet remained unchanged and again disappeared when succinic acid was given for only two days

The specific antiketogenic effect of succinic acid is best proved by the fact that in this severe case on the withdrawal of insulin not only was the acetonuria not increased but it had entirely disappeared in a few days. Szent Györgyi and Korányi then deliberately gave their patients a diet rich in fats to produce an acidosis The ketonuria ceased completely in four of the cases while in the fifth the drug was only partially effective. In these cases a dose of 10 g was given by mouth but it was found that this could be quickly reduced In the more recent cases now under treatment, 5 g is being given. Prof. Szent Györgyi persisted with the dose for two days after ketonuria ceased and then he reduced the dose gradually The succinic acid was given in 2 per cent aqueous solution by mouth taken three times a day after the principal meals. Succinic acid has a very unpleasant and persistent taste and though some patients tolerated it others refused to take it, so that it had to be given them in capsules Szent-Györgyi and Korányi have been experimenting with the peroral administration of the calcium salt which is much less unpleasant and can be taken as a powder

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Fulham Babies Hospital.—This hospital which has been run as a voluntary institution since its foundation in 1915 is to be taken over by the Fulham council as part of their maternity and child welfare service

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM A READER

III

An elder statesman of the nineties—I cannot remember his name—declared that he saw only one real consequence of universal education the remarks scrawled on the walls in public places appeared three feet lower down. This view is a trifle pessimistic, for we have become informed and sceptical about quite a number of things outside our own professional concerns But whole new worlds have been opened for us, and in these we can still be imposed upon The quack on his box at a fair, a self constituted professor, nowadays raises a tolerant smile, and he owes any success that he has to the gambling spirit We bet on the probability that a patent medicine sometimes cures, and after all doctors don't know everything, and though we buy the stuff, we flatter ourselves that we've no illusions about it

The modern world has subtler means of overcoming sales resistance There is a myth current in London cosmetic circles, which must be very helpful in keeping the wolf from the beauty parlour door A whole pathology has been built up round the word "acid" "Acid" is at once a cause, a disease, and an almost ritual diagnosis As far as I can judge from second hand information, both professionals and clients believe in it "Acid" is the collection of spots on the chin of adolescent young ladies If fat doesn't reduce quickly during a course of massage, there must be a lot of acid in the deep tissues Excessive flushing after massage or after a hot mud pack is due to acid and "high blood pressure" Is the skin dry, is there eczema or excessive dandruff, are there rheumatic nodules, or does the hair fall out? You've got acid. Is your complexion greasy? You've got acid. It will be noted that I am paraphrasing freely, for no cosmetic expert would openly refer to a client's skin as greasy, the lady is merely one of the "oilies" At first sight "oilies" appears a peculiarly nauseating category, not much better than "greasies," but a moment's thought reveals its superiority, for the best people, from Bulwer Lytton's Roman patricians at their toilet to the Noble Savages in the South Sea islands, use oil on their skin, so that a little "natural oil" on the face bears no stigma of vulgarity

Acid is an ancient, well established word. Here is no exploitation of up to date fancies, like skin foods full of vitamins and hormones It is not difficult to imagine how it has achieved its overload of cosmetic meaning There is the chronic dyspeptic, who suffers from acid regurgitations, and "acidity" is often accompanied by a bad complexion There are gouty nodules, formed as every newspaper reader knows, by those wickedly sharp crystals of uric acid these are readily confused with rheumatic and fibrositic nodules, and with the induration round old acne pits The lay mind, too, is dimly aware of acidosis as an undesirable pathological state These concepts probably fused when therapeutic masseuses were absorbed into the cosmetic profession The beauty specialist, vaguely seeing acid behind all skin complaints, finally identifies with it anything she can remedy by her efforts, until before long she is removing "acid" through skin for almost any minor derangement of health. "Acid" is a success, for it is a forceful and impressive word, and yet its associations are vague enough to ensure that no one convicted of having it about her person will suffer any loss of *amour propre*

* * *

The reading public has a peculiar regard for the scientist as a man His opinions on Modern Problems get no more space in the press than the philosophy of a transatlantic flier or a pugilist, but they are accorded a little more weight The layman has a healthy respect for an intellect trained in deduction and skilled in the pursuit of truth, and he supposes the scientific worker to be capable of thinking as competently about everyday existence as he does about his experiments The layman must often be disappointed. Human beings are concerned with so many non intellectual activities, like love and politics, that there is little opportunity for logical decisions about social behaviour, and even supposing a man could carry scientific objectivity into all his human relationships, he could not stand up for long against the enormous pressure of emotional circumstance, sooner or later prejudice creeps in Scientists live and think just as sensibly and just as stupidly as any other class of people It is surprising, however, that with such obviously fruitful logical powers at their command, they do not make a comparatively greater effort to live in a logical manner The most likely explanation that suggests itself is that conscious logical manipulation of ideas has little part in the mental processes either of the home or of the laboratory Research workers have a logical equipment of some sort, but the majority of them certainly don't acquire it as such In an average scientific training there is very little specific teaching on the arts of thinking A display of all the aspects of a particular science is supposed to inculcate mental flexibility in a student by example, much as the discipline of the study of Greek is supposed to induce a spiritual attitude compatible with the instincts of a gentleman I suspect that advocates of both notions are rationalising after the event A man who is conscious of a good logical equipment can appreciate its application in the sciences he learned in his youth. But it doesn't follow that his logic has been distilled, like an essence, from the complex structure of facts that he assimilated. And the tribute paid by our great men to the formative value of their early Greek studies is an argument that is immediately revealed as teleological when confronted with all the young students of Greek who have turned out to be numskulls

* * *

Most scientific workers I have met appear to acquire their powers of straight thinking by trial and error They learn arguments as pieces of reasoning attached to something they're interested in, and eventually acquire a battery of useful mental tricks But it never occurs to some of them that what is valid for *a*, *b* and *c* in the laboratory, can apply equally well to Tom, Dick, and Harry at home Hence the man who is clever and open minded in his subject and a fool outside it Even within his own subject an experimental worker often gets along in an extraordinarily haphazard fashion One finds a series of papers, covering the work of several years—Studies in So and So I to XXII In them the author fumbles his way to verifiable fact, driven here and there by this or that counter argument until he hits upon the right answer with about as much volition as the experimental rat completing its first round in the behaviourist s maze There are not many extreme cases of this sort but a good deal of knowledge is acquired by fumbling The published fumble is regarded with suspicion because it looks clumsy and is wasteful Most of us manage to confine our fumbling to the privacy of the laboratory Some confine it to their mental processes and if it is done half consciously so that the thinker cannot recall how he did it, the final answer comes out with the air of miracle, and another triumph is recorded for intuitive thinking

I have never been able to acquire a proper respect for intuitive thinking though some regard it as the peculiar glory of the genius I can recognise that the genius of this sort fumbles fruitfully but he fumbles and in that differs only in degree from the rest of us It is customary in this connexion to cite Clerk Maxwell who is said to have arrived intuitively at some of the conclusions in his electromagnetic theory of light and to have demonstrated their mathematical truth subsequently But there is no process whereby concepts that arrive out of the blue can be divided into those it would be worth while to rationalise and those that can be dismissed as unprofitable and for one Clerk Maxwell there must be a hundred muddle heads who engender nothing but metaphysical nonsense Conscious logical reasoning is a much more praiseworthy activity and ultimately of much greater value to humanity if only for the reason that it is communicable. Mankind is already overloaded with facts and it might be better to lose what the Clerk Maxwells achieve in their intuitive moods, and avoid being overwhelmed by guesses at the truth masquerading as solutions to the riddle of the universe

* * *

Intuition as a substitute for thought is like the cocoa in the old advertisements, grateful and comforting There is a widespread fundamental distrust of logic, for at one extreme logicians tend to mistake the logical truth of a conclusion for its value, and land us in a course of action that may be correct but is certainly fruitless. At the other extreme they behave like Pavlov s dog which accustomed to act in one way or another according to the exhibition either of a circle or an ellipse could do nothing but tremble in an agony of indecision when shown a slightly eccentric circle They worry at a question till it has, not two sides but many and forget that however many sides a question has there is only one answer

A people can afford to listen to logic when everything else is going nicely Philosophic statesmen flourish in settled times when their rational thinking merely crosses the T s of policies that already have a fair measure of approval But when politics become urgent when enthusiasm is needed in the drive for salvation the rational thinker takes a back bench or nurses the pale cast of thought in a concentration camp It is a mistake for a politician to know too much and to think too clearly for he will only overburden his mind. Intellectual indolence has more than once been the making and the saving of the inspired amateur in English politics. If the logician survives in such times it is because masterly inactivity is indistinguishable from careful indecision and with our readiness to believe the best of our betters we are prepared to find a clever tactician in the mugwump (The etymology of this expressive word is obscure It has been recently defined as one who sits on the fence his mug on one side his wump on the other)

* * *

The dislike of exact thinking in politics is probably responsible for the popularity of dialectical materialism as a philosophy of communism I am ignorant of the exact shades of interpretation that are infused with Talmudic subtlety into the tenets of this philosophical system But it has been accepted in its broad outline as a philosophy of action for the rank and file who are no better dialecticians than I am and from this uninformed point of view it seems to me an admirable apparatus for vague mental gymnastics From the interaction of two contradictory theses or ideas there emerges a new synthesis. The interpenetration for example of capitalist and proletarian systems results in the communist state Observed facts are hard things to deal with Elevated to the rank of abstract theses, they become less uncompromising more pliable and can be manipulated in the grand speculative manner Conclusions become all embracing and the world is remoulded nearer to Karl Marx s desire. Though it is claimed that dialectical materialism is the only scientific philosophy—other philosophies being pre-scientific '—Soviet science remains patently Aristotelian in outlook, and there is nothing in it that could not have been satisfactorily achieved by plain logic while Soviet politics, presumably based on the dialectic are as muddle headed as the democratic or fascist brands.

Communism will survive dialectical materialism as adolescents outgrow their taste for midnight speculations about God and life. The philosophy made two valuable contributions to thought: it taught that all philosophies are socially conditioned and it emphasised the need for abandoning static conceptions and for thinking in terms of processes But processes are difficult to define clearly and a technique for thinking about the undefinable was bound to become the delight of the arm chair speculator and the refuge of the woolly minded.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 3RD 1937

Notifications—The following cases of infectious disease were notified during the week: Small pox 0 scarlet fever 1803; diphtheria 1001; enteric fever 21; pneumonia (primary or influenzal) 589 puerperal fever 30; puerperal pyrexia, 111 cerebro-spinal fever 15; acute poliomyelitis 8 acute polio-encephalitis, 2 encephalitis lethargica, 2; relapsing fever 1 (Uckfield R D); dysentery 35; ophthalmia neonatorum 101 No case of cholera plague or typhus fever was notified during the week

The number of cases in the Infectious Hospitals of the London County Council on July 9th was 3055 which included Scarlet fever 756; diphtheria 826 measles 179 whooping cough 470 puerperal fever, 17 mothers (plus 0 babies); encephalitis lethargica 285 poliomyelitis 8 At St. Margaret's Hospital there were 24 babies (plus 11 mothers) with ophthalmia neonatorum

Deaths—In 124 great towns including London there was no death from small pox 1 (0) from enteric fever 8 (1) from measles 4 (0) from scarlet fever 18 ([illegible]) from whooping cough 20 (2) from diphtheria

(*Continued at foot of next page*)

CORRESPONDENCE

PASTORAL PSYCHOTHERAPY

To the Editor of THE LANCET

SIR,—I have received, as I presume have other medical men, a circular advertising the Guild of Pastoral Psycho Therapy The aim of this guild is apparently to "train" the clergy to perform this branch of medicine (Not apparently so much for the benefit of the patient but because "there is a growing disposition on the part of the public to accept the facilities thus offered and to take to the medical psychologist many problems of inner life about which, hitherto, the minister of religion has been consulted"—i.e, the clergy feel a loss of prestige) To my surprise I find that this is supported by a small number of medical men I cannot think that it was realised by them that they were encouraging an incursion of the unqualified into the realm of medical practice This is particularly unfortunate since psychotherapy has at last won its spurs and is being appreciated by the majority of the medical profession

The viewpoint of the clergy—i e, right and wrong, sin, and the need for punishment—is incompatible with the detached, unemotional, scientific point of view of the qualified physician. The neurotic has already his load of guilt and to instil the idea of sin will inevitably make him worse rather than better Unless the clergy are willing to abandon many of their fundamental principles they must abandon psychotherapy

This question arouses the old controversy of the lay analyst and the dangers of an outbreak of general paralytics and cerebral tumours "analysed" until too late for treatment

Lord Horder's withdrawal of his name from this project makes it appear that medical men were asked to support it and did so under a misapprehension It is presumed that reputable medical men will recognise this and withdraw as gracefully as Lord Horder has done In conclusion might I say that I am not hostile to religion in its proper sphere, but that sphere certainly is not medicine

I am, Sir, yours faithfully,

London, W July 9th CLIFFORD ALLEN

FLUORESCENCE MICROSCOPY

To the Editor of THE LANCET

SIR,—The annotation in your last issue draws attention to a valuable technique, but suggests that the method is only open to the fortunate few who possess expensive quartz optical apparatus I think this is misleading I have employed fluorescence microscopy for many years, and recently have found it of great value in tracing the fate of fluorescent carcinogens of the benzpyrene type in the animal body The apparatus used is as follows —

A quartz mercury lamp contained in a light tight hood

A screen of Wood s glass, transmitting an ultra violet spectrum from 3800 to 3150 A u.

An ordinary microscope with glass lenses and condenser, and glass slides and cover slips

With the possible exception of the quartz lamp and Wood's glass screen, the rest of the apparatus must surely be available in every biological laboratory The cost of a suitable lamp with resistance is about £15, and any light tight mounting, such as a large box with baffled ventilator, is suitable The Wood's glass screen costs about 45*s* for a screen 4 in. by 3 in, but smaller screens are quite suitable Most laboratories can meet expenditure of this order, whereas the cost of quartz condensers and slides is greatly in excess of this

I draw attention to this because I believe there is a widespread belief, even amongst medical men that glass cuts out all ultra violet rays Actually, Wood's glass cuts out practically the same range of the ultra violet spectrum as does ordinary clear glass, with the addition that it cuts out the bulk of the visible spectrum Consequently, when this filter is used, there is no advantage to be gained in using quartz condensers and microscope slides, though these may be necessary for certain research purposes Care must be used in the selection of the mounting media, as many of these are fluorescent, but water or saline are suitable for most biological material and serve for the time necessary to make observations on their fluorescence under the microscope.

It need hardly be added that a dark room is essential for this work, and that the eye must be adapted to the dark before the best results can be obtained

I am, Sir, yours faithfully,

Glasgow, C 3 July 9th P R PEACOCK.

MEDICAL PEACE CAMPAIGN

To the Editor of THE LANCET

SIR,—The unfettered thoughts of Twelfth Man, your contributor in *The Lancet* of June 26th, would suggest that his place in the team was not unwarranted He resents the suggestion that doctors should attempt a specific contribution to the subject of war and peace Are we to sit quietly with hands clutching Air Raid Precautions Handbooks 1–10 until a wave of destruction, the like of which the world has never seen before, breaks over our head, and then clinging to a mass produced gas mask and a bag of sand, assure the population that all is well ?

The younger generation of medical men are not satisfied with attempts at repairing the hopelessly maimed, and they, taking inspiration from the preventive measures advocated by a number of their thoughtful predecessors, see no reason why similar attempts to elucidate causation should not be applied to war Why should we stand abashed by the possibility of making a contribution to what is nothing but a human problem ? It is suggested that there are professionals in this field whose job it is to deal with such matters If we ask "What manner of men are these ?" what answer would be given ? Do they reside in the War Office, the Admiralty, or the Foreign Office ? Maybe we are expected to see them amongst the great armament firms of the country

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(Continued from previous page)

46 (9) from diarrhœa and enteritis under two years, and 4 (0) from influenza The figures in parentheses are those for London itself

Measles was fatal in two cases at Birmingham, whooping-cough in three cases at Liverpool and at Manchester The deaths from diphtheria were scattered over 14 great towns 4 at Birmingham 2 at South Shields Liverpool had 3 deaths from diarrhœa no other great town more than 2

The number of stillbirths notified during the week was 300 (corresponding to a rate of 43 per 1000 total births), including 45 in London

I would suggest that we as doctors are not amateurs at assessing human motives—and as is well realised the nation is but a conglomeration of individuals who motivate it. We cannot stand quietly aside watching the advance of an era of destruction which is bound to nullify any efforts we are at present making in the improvement of our race

Twelfth Man is surprised at the lack of unanimity in answers he expects to various questions he poses Has not this always been the case when study of any major problem has been commenced? Would he now fail to get unanimity on such questions as: In the eradication of rickets is slum clearance advised? Do lack of adequate food the presence of insanitary housing and tubercle bacilli in milk play any part in the maintenance of tuberculosis in the population? Would you as a doctor and a man advocate the abolition of these phenomena, or would the answer come 'As men these questions touch us nearly but as doctors not at all'? Day by day medicine calls us to intervene further and further in all branches of human activity—we cannot and should not seek isolation behind shibboleths of scientific detachment To-day the doctor is more than ever an integral part of a rapidly moving community He should be prepared boldly to play his part, and in no sphere more than in that of preventing our present civilisation from hastening to its own destruction.

I am Sir yours faithfully

H JOULES

London W July 12th

NOISE

To the Editor of THE LANCET

SIR,—I have just been discharged from a nursing home, after an operation which caused me neither pain nor serious discomfort. I mention this fact as I do not want it to be thought that I am making any complaint on my own account; but I wish so far as possible to obtain backing from the medical profession on a complaint, in many cases a serious one which patients in these homes have, I believe very good grounds for making and which even to one as little ill as I was was most noticeable. This is the absolute lack of any decency or consideration on the part of a great many of the motoring public.

During the day I can understand that it is difficult to do much to prevent a great deal of the noise, but surely at night some sort of consideration towards a large number of invalids might be shown. Hooters were blown incessantly all sorts of strange hooters making all sorts of weird noises. The question of silencers was entirely disregarded. Speeding up the engines while going through the low gears and starting after signal lights had held up the vehicle, was carried to the nth degree. I had the feeling that there were a great many young people dashing about, no doubt on their lawful occasions in very antiquated cars, who wished to draw attention to what fine fellows they were (and what ancient vehicles they were driving!) by making a quite unnecessary noise.

I feel perfectly certain that if sufficient medical backing were given to the gravity of this nuisance, there would be practically no opposition in the House of Commons to the passing of measures which would inflict such penalties that this sort of thing would be stopped. But it would be of very little use taking this question up unless one were assured of the support of the medical profession. Unfortunately in the House of Commons we have very few doctors who could speak on the subject but as I have said above I am certain that all members of the House would lend a sympathetic ear to any suggestion to put an end to the state of things which exists, and would assist in the rapid passing of any Bill which had the prevention of this nuisance as its object

I am Sir yours faithfully

N STEWART SANDEMAN

July 12th

HEADQUARTERS OF THE NURSING PROFESSION

To the Editor of THE LANCET

SIR,—On reading your interesting notes on the new home of the General Nursing Council in Portland place it occurs to me that it may be worth while to recall that No 25, one of the demolished houses, was designed by the Adam brothers for the personal occupation of Robert Adam and in view of the number of original decorative features that have been so skilfully incorporated in the new building it seems to me rather a pity that this personal association with the original architect has not been retained by choosing 25 rather than 23 as the street number for the new house There seems to be a good deal of uncertainty as to who painted many of the pictures introduced by Robert Adam into his ceilings but I rather doubt whether you are correct in attributing the paintings replaced in the new building to Cipriani If my information is correct some at least of these are those which adorned the drawing room ceiling at No 25 this ceiling the beauty of which lay as much in the delicacy of its plaster work as in the paintings, was one of the most notable decorative features of the house, and during the 22 years in which my father lived there it was commonly accepted that the paintings were by Antonio Zucci. Zucci had been associated with Robert in his work at Spalato and he later accompanied James on his continental tour he married Angelica Kaufmann as her second husband in 1780 and presumably left England with her when she returned to Italy the following year

Another point of much more trivial nature may be of interest. When my father went to live at No 25 in 1895 he was the first person allowed by the estate to engage in medical practice in Portland place north of Duchess street, and he was only allowed to put up a plate because the front door happened to be round the corner in New Cavendish street He was followed a few years later by Sir Charters Symonds (then Mr Symonds) at No 58 Sir Charters was not allowed to put up a plate but he got over the difficulty very ingeniously by standing a visiting-card in a neat leather frame on a ledge inside the narrow glass window at the side of the front door After this the ban appears to have been removed for further invasion of this austere thoroughfare plates and all followed pretty quickly

No 25 was the scene of a somewhat unusual accident A bolting horse and railway van careering up New Cavendish street was deflected from its course and crossing Portland place dashed into the railings of No 25 Railings, horse and van crashed into the area to the vast astonishment of the maids taking their afternoon rest in the front basement sitting room A crane was rigged up through the dining room window and the van lifted to the street relieved of this incubus the horse rose to his feet and was found to be unhurt, and with the aid of a little straw walked with some dignity up the winding area steps to the cheers of an admiring crowd It is sad to relate that his good luck here availed the poor animal little, he had taken the bit between his teeth before and the company decided that it was in the public interest to end his adventures with a bullet

I am, Sir, yours faithfully,
GORDON W GOODHART

West Cromwell road S W July 10th

TESTIMONIAL TO DR F W EURICH

To the Editor of THE LANCET

SIR,—After being in practice as a consulting physician for over 30 years, and for 24 years professor of medical jurisprudence at Leeds University, Dr F W Eurich has intimated his intention to retire from practice and to reside in the south of England. The very large number of medical practitioners who, during the long period of Dr Eurich's work, have sought his aid in the treatment of their patients, including in many cases themselves and their relatives, are not willing that he should leave Yorkshire without having received from them some small indication of the great esteem in which he is held by all who know him It is proposed that subscriptions limited to one guinea should be invited from all medical practitioners who have been associated with Dr Eurich It is also intended to present this token of esteem at a dinner to be held at 8 P M on Wednesday, Sept 29th, at the Midland Hotel, Bradford.

We are, Sir, yours faithfully,
GEOFFREY PRIESTMAN,
Hon Sec. Bradford Division B.M.A.
F E CHESTER WILLIAMS,
Hon Sec Bfd Medico Chirurgical Soc

Bradford July 13th

THE SERVICES

HONORARY SURGEON TO THE KING

Surg Rear Admiral F J Gowans, M B Durh , has been appointed honorary surgeon to the King in the vacancy caused by the retirement of Surg Vice Admiral Sir Basil Hall, K C B , O B E , M R C S Eng

ROYAL NAVAL MEDICAL SERVICE

Surg Vice Admiral Sir R W Basil Hall, K C B , O B E , placed on Retd List

Surg Rear Admiral P T Nicholls, C B , granted rank of Surg Vice Admiral

Surg Comdrs E B Pollard to *President* for R N College, Greenwich, and *Despatch* , F B Quinn to *Neptune* (on commg) , R L G Proctor to *Courageous*, and as squadron medical officer , G E Heath to *President* for course and G S Rutherford to *Drake* for R N Barracks, Devonport

Surg Lt Comdr J J Keevil to rank of Surg Comdr

Surg Lt Comdrs W M Greer to H M Dockyard, Malta , J C Gent to *Nelson* and W R S Panckridge to *Victory* for R N Hospital Haslar

Surg Lts F P Ellis to *Medway* and E J Littledale to *Caledonia*

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt Comdr D A Imrie placed on the Retd List

Surg Lts S E Cooke to R N Hospital Chatham W Gough to *Revenge* and R P Prewer to *Curacoa*

ARMY MEDICAL SERVICES

Col A Irvine Fortescue D S O , late R A M C , having attained the age for retirement is placed on ret pay

Lt Col and Bt Col R C Priest from R A.M C , to be Col. with seniority April 15th 1934

ROYAL ARMY MEDICAL CORPS

Maj J Higgins to be Lt Col

Maj J S B Forbes retires on ret pay

Short Service Commission Lt (on prob) D G Levis is restd to the estabt

Lt (on prob) G M Robertshaw is secd under the prov of Art 213 Royal Warrant for Pay and Promotion, 1931

REGULAR ARMY RESERVE OF OFFICERS

2nd Lt O G Wilde from Gen List, Res of Off , to be Lt

MILITIA

Maj E A Wilson relinquishes his commn and retains the rank of Maj

TERRITORIAL ARMY

Capt A A Allison resigns his commn and retains his rank, with permission to wear the prescribed uniform

Capt A S Henderson relinquishes his commn on account of ill health

Lt P R Mitchell from 4th Bn Gordons, to be Lt with seniority Dec 23rd 1936, next below Lt J M Matheson, June 12th, 1937

M H A Davison (late Offr Cadet, Durh Univ Contgt , Sen Div , O T C) to be Lt

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt A C Sinclair, from Active List, to be Capt

Capt W P Kennedy, from Active List (Seconded), to be Capt

ROYAL AIR FORCE

Wing Comdr T McClurkin to Special Duty List, while seconded for duty with the Medical Research Council

Squadron Leader J Parry Evans to R A F Depôt, Uxbridge, while attending post-graduate course of study at the Royal Infirmary, Edin

Flight Lts G A M Knight to Central Medical Establishment, London , E B Harvey to Marine Aircraft Experimental Establishment, Felixstowe

Flight Lt J F Ziegler is transferred to the Reserve, Class D

Flying Offr E H E Cross is promoted to the rank of Flight Lt

Medical Branch —Flying Offr J D H Cran to R A F Station Thornaby, and D J Dawson to R A F Section, Hendon

Dental Branch —Flying Offrs A. J Clegg, T A Gray, to Home Aircraft Depôt, Henlow , F V Frank, J F M Sampson to No 1 School of Technical Training (Apprentices), Halton

INDIAN MEDICAL SERVICE

Majs to be Lt Cols L K Ledger and G M Moffat

Lt Col A S Leslie retires

Indian Medical Department —Lt (Sen Asst Surg) A J Gomez retires

COLONIAL MEDICAL SERVICE APPOINTMENTS

The following medical officers have been appointed Dr E A Beet to Northern Rhodesia , Dr G F Cobb and Dr E M Clark to Kenya Dr I M Hill to West Africa Dr V E Donawa and Dr D R Huggins to Trinidad Dr P S Selwyn Clarke has been appointed director of medical services, Hong Kong , Dr Carmichael Wilson, senior medical officer Gambia , and Dr A L Krogh, senior medical officer (physician) Colonial Hospital, San Fernando Trinidad

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ISOLATION HOSPITAL FOR MID STAFFORDSHIRE —The Ministry of Health has approved a scheme for the erection of a joint isolation hospital to serve Mid Staffordshire

LOWESTOFT AND NORTH SUFFOLK HOSPITAL —On July 8th at this hospital the Duchess of Kent laid the foundation stone of the nurses' hostel which is to be erected as a memorial to King George V at a cost of £12,000 She received over 200 purses containing some £5000

PARLIAMENTARY INTELLIGENCE

GROUNDS FOR DIVORCF

IN the House of Lords on July 7th the Marriage Bill was considered in Committee

THE FIVE YEAR PERIOD REDUCED

On Clause 1 which provides that no petition for divorce shall be presented to the High Court until five years have passed since the date of the marriage Lord SALTOUN moved an amendment to insert at the beginning Except as otherwise expressly provided in this Act He said this was necessary because of a later amendment to Clause 5 to enact that if one spouse against the will of the other refused to permit the birth of a child without reasonable cause it would establish a ground of divorce without delay The divorce must not be unduly delayed since the prolonged use of contraceptives induced sterility He thought that the use of contraception by one partner against the other s will was a crime and far worse than adultery —Lord ELTISLEY persuaded the supporters of the Bill to reject the amendment; he thought it was clearly inadvisable if not dangerous, to introduce a new ground of divorce without support such as that of the Royal Commission Moreover there was no definition of what was to be called reasonable cause for the use of contraceptives

Lord JESSEL, for Lord Maugham moved an amendment that the period should be reduced to three years He said that while many considered five years too long others thought that there should be no time limit at all but there was no chance of the Bill passing in the House of Commons if the time limit was altogether removed —Lord ELTISLEY said that the supporter of the clause generally believed that a limiting period would reduce the tendency to companionate marriage emphasise the State s desire that marriage should be a permanent institution, and discourage rash and foolish marriages It was difficult to lay down what that period should be It might be a satisfactory compromise to reduce the period to three years and he suggested that discretionary power should be given to the courts in exceptional cases He was prepared to accept the two amendments in the name of Lord Maugham After further debate the two amendments were agreed to

After debate a motion by Lord REDESDALE to delete the clause was negatived by 88 votes to 74, and the clause as amended was ordered to stand part of the Bill.

INSANITY

On Clause 2 which sets forth the proposed grounds for petition for divorce Lord ELTON moved an amendment to delete the paragraph that provides as a ground for divorce that the respondent is incurably of unsound mind and has been continuously under care and treatment for a period of at least five years immediately preceding the presentation of the petition. He said this paragraph alone permitted divorce for misfortune, the misfortune of being incurably of unsound mind" He quoted from the evidence given before Lord Gorell s original Commission the statement of Dr Robert Jones one of the two chief medical experts who testified on behalf of divorce for insanity It has become an axiom in the study of prognosis as to mental disease that anything may happen in lunacy Excepting what we call dementia the most unlikely and unexpected recoveries take place The whole tendency of modern psychology Lord ELTON went on, was towards not recognising that any or at any rate scarcely any mental insanity was to be regarded as incurable? During the war many a case of shell-shock was pronounced incurable which was finally and permanently cured Would not the experience of most of them when they consulted medical experts on some obscure physical condition which was usually far less baffling than an obscure mental condition, that although those experts lavished the utmost devotion on the problem they almost invariably disagreed? Once they accepted the principle that divorce was possible because misfortune had unfitted the sufferer for fully discharging his marital functions then there were many other misfortunes which could be classed sooner or later in that capacity such as some lingering physical diseases

Lord GORELL said the majority of the Royal Commission after listening to the whole of the evidence came to the conclusion that insanity with a definite safeguard, should be recommended as a ground for divorce He earnestly hoped that their Lordships would retain this as one of the causes for divorce in the Bill

The Archbishop of CANTERBURY said he felt bound to say a word in support of the amendment They could not ignore the fact—he imagined Lord Dawson had accepted it—that they could not really speak of mental disease as being incurable He himself had been a member of the Royal Commission and he had been particularly impressed by the evidence of one who certainly at that time it would be admitted was a great authority on all matters of mental disease Sir George Savage After reviewing carefully his forty years experience had come to the conclusion that he could not support the inclusion of insanity as a ground for divorce. The Archbishop thought that the majority of the expert witnesses before the Royal Commission were against the inclusion of this cause. For instance four Commissioners in Lunacy the Lord Chancellor s Visitor in Lunacy (Sir George Savage) and others who were familiarly dealing with people of this class every day had brought home to the Commission that the apprehension that some approach of insanity might develop into a cause by which anyone might lose a home or spouse would have the gravest effect He thought that the adoption of this clause would retard the recovery of those who were curable and sometimes would upset the balance of those who were liable to become insane

Viscount CLIVE pointed out that in a very material and important matter the recommendations of the Royal Commission were not given effect to in this Bill. The Commission said :—

> We further recommend that the insanity should be found to be incurable to the satisfaction of the Court and that this ground should only operate when the age of the insane person is if a woman not over fifty years and if a man not over sixty years The last recommendation would exclude the case of senile dementia and cases where there is no reasonable ground for dissolving the marriage having regard to the age of the parties

The evidence given by Dr Robert Jones showed that in London alone at that time there were 7830 cases aged 50–80 to which this would apply of men alone aged 60–64 there were 1442 cases Not one of the doctors who had appeared before the Royal Commission had said that they were able to pick out the cases that would recover Again and again before the Commission it had been stated that sane members of the community particularly females were liable to be upset as a result of proposals such as those contained in this Bill

Viscount DAWSON OF PENN said that on essential subjects there was more general agreement in the medical profession that almost in any other He thought it was common ground that they all ought to be as human as they could be and most of them thought they were pursuing the Christian ideal It was also common ground that this particular group of cases was one that demanded their very careful and merciful consideration because generally it was not a matter of fault but one of misfortune This was not strictly true and he would only mention as examples chronic alcoholism and syphilis. Still, broadly speaking, the element of misfortune did come into the question of insanity more than into that of adultery and cruelty. They had therefore to be very careful to hold the scales of consideration and justice as between the patient on the one hand, and the equally suffering partner and children on the other. From the speeches that had gone before, one would think there had been no suffering partner, but anyone who had had an opportunity of studying insanity in the home would often come to the conclusion that far more sympathy was to be extended to the spouse than to the patient, who felt things less acutely. Under Clause 3 of the Bill the insane patient must have had continuous treatment in some form of institution for a period of five years. That in itself was a great protection. It was a fact agreed by a fair consensus of opinion that the chances of recovery after five years' continuous treatment were small. To assert that anything in the world was "incurable," which meant 100 per cent., was not a very wise statement by a scientific man, and he was proposing to put in instead "one who is believed to be incurable." That, he thought, was a fairer and more accurate statement.

The prospects of recovery in the first year of treatment were very good, but the prospects grew less until after five they were very small. Therefore he put it to their Lordships that after five years, when the prospects of recovery for the patient were so small, was it not their duty to give the suffering spouse a chance of relief? They did not make it compulsory. They were apt to forget that the large majority of people with whom they were concerned in this Bill lived in houses of only a few rooms and therefore cases of cruelty or insanity, whether caused by drunkenness or drug addiction, pressed much more hardly on those sections of the population. Patients let out of an asylum were not normal and had to be treated with great care. They were easily fretted and made irritable and why each time such a patient came out should the home be destroyed and the health of the other spouse endangered? He thought the people who fixed the period of five years had done so after great consideration and after getting advice from experts.

On the question of incurability, the only reason why he proposed to amend this paragraph was really for scientific accuracy. If he asked their Lordships to insert the words "believed to be incurable" that did not mean that the medical profession had the power to say that no case was incurable. Shell-shock during the War was on a totally different footing from cases of insanity which resulted from organic and structural disease. Cases, for example, of hardening of the arteries were completely incurable by the very nature of things, and there were certain definite structural causes of insanity which in their very nature must be incurable. Therefore, it was very important to distinguish between such cases and that large groups of functional cases which if they were put under treatment for five years would be cured, and most of them a long time before. But the large majority of patients who had been treated continuously for five years did not get well, and therefore when that period had passed they should in mercy and justice turn aside from the odd chance of the patient getting well and look after the spouse and the children.

It had been said, and it was said in the *Times* that day by Sir Reginald Poole, a very distinguished solicitor: "Think of what it would mean for an insane person to think of the prospects of divorce, of his feeling that he has been displaced in his home, that his children belong to someone else." The answer to that was perfectly clear; it did not take place. They were very apt to judge those who were mentally deranged in terms of themselves. In the large majority of cases where persons had been under continuous treatment for five years the acuity of mind had gone, the range of mental vision had contracted, the powers of appreciation had steadily declined; the point of view was narrower and they felt not as others might think they would feel. They become accustomed to their surroundings, they looked only a short way ahead, and their life and thought with the deterioration of their minds were entirely different. He himself had no fear on that point. There would be no substantial injustice done. He begged their Lordships in the interests of the nation and the spouse, without doing any substantial injustice to the patient, to pass the clause.

The Marquess of SALISBURY said that it was very significant that Lord Dawson had already abandoned in its integrity the word "incurable"; he used it, but he used it with great limitation. He had also spoken of insanity which was incurable in the great majority of cases; that was very significant, because it was an admission in effect that there was a substantial minority of cases which would turn out not to be incurable. Here were cases of insane persons, the great majority of whom would not recover, and Lord Dawson proposed that the substantial minority should undergo the risk of divorce. The Archbishop of Canterbury had shown that it was by no means proved that authority was all on the side of change. Their Lordships were asked to make a great decision, involving a very great principle, and he hoped that they would agree to the amendment.

The Bishop of BIRMINGHAM said he would like to stress the aspect of heredity. Excluding cases like chronic alcoholism or syphilis a man became insane because of something in his make-up; he inherited a highly organised nervous structure. He handed on his highly organised structure, which was part of his inheritance, to his children, and if his organisation was such as to render him liable to a break-down leading to incarceration in a mental home then there was more likelihood that he would hand on to his children a grievous type of instability which they might show as they grew to manhood. Their Lordships had been constantly told of the medical evidence before Lord Gorell's Commission—evidence given before 1912—but much progress in the study of inheritance had been made since that time. Mendel's great paper was rediscovered in 1900, but it was not really taken up by large groups of research students until about the time of the War. Since then, as everyone knew who had made even a cursory study of the literature, the volume of research had been enormous and the results were sometimes disquieting. The allied though quite different subject of mental defect was adequately provided for in the clauses relating to nullity, but one witness before the Brock Departmental Committee which had inquired into mental defect some years ago, had later said that probably inheritance existed in at least 90 per cent. of the known cases of mental defect. Inquiry into the inheritance of insanity was even more difficult than that into inheritance of mental defect; but there was no doubt whatever that a very considerable proportion of the cases of insanity resulted from a morbid inheritance. Were they to allow the possibility that a man carrying such a taint in his make up that he had been for five years in a mental home might come back and produce more children? He could conceive nothing more awful than that a woman should be expected to bear children to a man whom she knew to have this taint. They might say that she ought to have discovered it before marriage, but nothing was more carefully concealed in all classes of the community; a fact that was particularly well known to all doctors in mental homes, for their endeavours to find insanity in the family in the past often failed because frank evidence was not forthcoming. From the point of view of heredity it seemed to him that they had drawn rather too stringent precautions and he would make it easier for the same partner to obtain relief.

Lord ADDINGTON said he had had experience with a mental hospital, both in visiting and in the discharging of patients. The progress of medical science had gone on for 25 years since the Royal Commission and they looked forward to much progress in the years to come While discharges after five years were not common they did exist and it was extremely difficult to say whether any case was incurable He thought a very dangerous principle was shown in this Bill to use this class of misfortune in this way

Lord ELTISLEY said this matter was very carefully considered by the Royal Commission and it was evidently the view of the House of Commons that this paragraph should be included in the Bill Its supporters were of the opinion that insanity was on quite a different plane from any other illness. While in physical illnesses there could be still a very real companionship between the parties in insanity that companionship could no longer exist He hoped the amendment would be resisted. It was negatived by 95 votes to 31

Lord DAWSON said that he had been informed that the amendment he proposed to move to insert the words believed to be incurable, would probably not meet his purpose Therefore he would not move that amendment at this stage but would retain a discretion to revive it on Report —Lord DAWSON had an amendment on the paper to add to paragraph (d) or has during that period been subject to recurrent fits of insanity He said that although he knew how tragic these cases of insanity were he had failed to satisfy his own criterion and his own standard that they must hold the balance justly between the patient and the spouse In cases of cyclical insanity dangerous as those people were to the happiness of their homes, he was afraid that it would be true that when the patient came back from a period of insanity and re-entered the home he would know and would suffer as a result of knowing that he might be divorced whereas in the case they had been discussing in the clause itself, at the end of five years he would in the majority of cases not know With their Lordships permission he would not move the amendment

HOMOSEXUALITY

Viscount DAWSON OF PENN moved an amendment providing that a petition for divorce might be presented on the ground that the respondent had since the celebration of the marriage been guilty of the practice of homosexuality The word ' sodomy he said, had in the course of time become inadequate and unsuitable It applied to a crime that was open only to the male but the progress of knowledge had altered their conception and they therefore had adopted the word homosexuality which referred to both sexes That was one justification for the addition he suggested. Another was that they now looked on homosexuality as a pathological condition. He was not at all sure that in the future it might not be regarded as an insufficiency disease and although it was true that the law must take cognisance of homosexuality and punish it in order to act as a preventive to potential offenders the more reasonable view was gradually being adopted that it at any rate had one foot in the realm of disease and was not wholly in the realm of crime This was an occasion for recognising with advancing knowledge the increasing tendency to regard it as a pathological process, which concerned those who had to deal with disease For the purposes of the Bill however it would be entirely wrong to use any word which confined homosexuality to one sex It was really time that there should be equality of treatment between men and women. For that reason also the insertion of this special paragraph was justified They all knew that this particular offence was quite compatible with excellent qualities of mind and character and it was most important to realise that in the case of individuals who had a leaning towards or attraction and affection for the same sex whether they had a parallel affection for the other sex or not it could not possibly be maintained that they were suitable people for marriage Such people would frustrate the purpose for which marriage existed and it would be a grave injustice to recognise any marriage in which homosexuality turned out to be existent in either of the parties A further reason for his amendment was that homosexuality in all decent people hid its head, and it was almost impossible for the spouse to have the misfortune of finding out before marriage that the natural attraction of sex was absent and that the partner was homosexual When that was discovered it ought to be a ground for divorce /There was every reason in favour of putting in this particular paragraph by itself if only for the purpose of recognising that it was an offence a misfortune, or a disease, whichever way they looked at it equally in a woman as it was in a man. While a man at the present time could be open to criminal prosecution, a woman could not but homosexual women could break up a home as he had had sad experience of just as easily as homosexual men

The Archbishop of CANTERBURY said that Lord Dawson had used the word ' practice Did he mean some particular act proved of this particular tendency or did he mean a continuing habit? The word practice seemed to be most dangerously vague He also asked if it was not the case in Lord Dawson s experience as it certainly was in his that even these unfortunate tendencies could be cured, and whether this was not a case of a disease if it could be called a disease which was incapable of cure

Lord DAWSON said he put in the word practice because individuals might be instigated into a single act of homosexuality partly by curiosity partly because they might be potential homosexuals and therefore open to the influence of an actual homosexual whom they happened to meet Having had that experience, however they might pull themselves up; very often they came into contact with a doctor or a friend They were people who were perfectly capable as he had knowledge, of being good spouses, and he put in the word ' practice ' for that reason He meant it to imply a habit a repetition and not a single instance

There was the question of cure For practical purposes he himself divided the homosexuals into those who were potential and those who were actual Some of the offenders against whom he wished particularly to guard were those who were potential because it was a fact that if one could only get the right influence to bear morally and physiologically one could guide them into the natural physiological route There was no more fascinating scientific study at present than the development of these imponderable forces. There was no doubt that a realm was being opened up which would enable more help to be brought to these people provided they could be caught in the early stages Whether they could be helped in later life he very much doubted

Lord ELTISLEY said he resisted the amendment because this recommendation was not one made by the Royal Commission and it was dangerous to endeavour to introduce a new ground of divorce of this character into the Bill —Lord DAWSON begged their Lordships not to decide by the knowledge of years ago If they were going to make a change on a matter like this, surely they must take cognisance of the progress in knowledge that had taken place in the last 25 years If there was one thing that had been established in our legislation of recent years it was equality of the sexes They ought to protect the man against the Lesbian just as they protected a woman against a male homosexualist

Lord ATKIN said that as a judge he had come across this subject and he (Lord Atkin) was for seven years President of the Medical Legal Society, where it was discussed. He would not like it to be thought that the House of Lords rejected the more modern application of science as put forward by Lord Dawson whom everybody trusted in the matter, without some reasoned objection to it To begin with he thought that it was not correct to say that these cases, though Lord Dawson did not say so were the result of something in the nature of disease It was quite certain in his experience that they were not They were the result of wicked impulses, capable of being controlled Like other impulses of the kind, they could be checked by advice and by resolution, and they did not appear to him to be of the nature of a permanent infirmity that was always likely to affect the married life The real answer probably at the present moment was that this was a subject which required very careful examination If some time or other a Select or Departmental Committee considered this subject in all its branches, the result might be a very valuable report upon which the criminal law and the civil law might very well be amended At the present moment surely it would be a mistake for their Lordships to send this amendment to the House of Commons with the discussion that would be likely to arise about it Later on, perhaps, it might have to be discussed, but at present the right thing was not to accept this new ground for divorce, put into the Bill for the first time —The amendment was negatived

HABITUAL DRUNKENNESS AND DRUG ADDICTION

Lord DAWSON, on behalf of Viscount Elibank, moved to add to the grounds of divorce, " is an habitual drunkard or an inveterate drug addict " For the purpose of these additional grounds a signed certificate would be required to be given in each case by two medical men, at least one of whom belonged to a panel of names approved by the Home Secretary on the nomination of the Royal College of Physicians, London. Those who held that marriage should be dissolved whenever such circumstances arose as frustrated the fundamental purpose of marriage could not to his mind logically exclude habitual drunkards or inveterate drug addicts The medical profession on these matters was extremely conservative, and it required a very strong case for any doctor to say that a person was an habitual drunkard or an inveterate drug addict Considering the whole attitude of mind of British medicine there need be no fear that doctors would not err on the side of caution

Viscount BERTIE OF THAME moved the following amendment to Lord Dawson's —

> ' The expressions ' habitual drunkard ' and ' inveterate drug addict ' mean a person who by reason of habitual drinking to excess of alcoholic liquor or of addiction to drugs, as the case may be, is (*a*) at times dangerous to himself or to others, or a cause of reasonable apprehension of such danger or (*b*) incapable of managing his own affairs The expression ' drugs ' means drugs to which Part III of the Dangerous Drugs Act, 1920, applies "

Lord ELTISLEY said he hoped the amendment would not be pressed This proposal was rejected in the House of Commons and he did not think that it would be to the advantage of the Bill that these words should be inserted Drunkenness was very often accompanied by cruelty and anyone who could prove that he or she was subject to habitual cruelty would be entitled to a decree If the drunkenness was continual, even if the man was not actually cruel, he would be guilty in law of constructive desertion and in such case therefore the injured spouse would be able to obtain a measure of relief provided the cruelty was continuous for three years Both amendments were negatived and Clause 2 and Clause 3 (Insanity Definition) were ordered to stand part of the Bill

OTHER GROUNDS

On Clause 5 (Decree of Judicial Separation), Lord ATKIN moved an amendment that a ground for judicial separation should be failure to comply with a decree for restitution of conjugal rights or on any ground on which a decree for divorce *a mensa et toro* might have been pronounced immediately before the commencement of the Matrimonial Causes Act, 1857 This he said covered the case of rape and so forth It included cases of gross indecency and probably covered generally the case of homosexuality —The Earl of DROGHEDA said that in principle the promoters would accept the amendment, subject to it being seen later what its effect would be when it could be dealt with on the Report stage The amendment was agreed to and the clause, as amended, was ordered to stand part of the Bill.

On Clause 6 (New grounds for nullity), Viscount CECIL OF CHELWOOD moved an amendment to provide that a marriage should be voidable on proof of unsoundness of mind not only at the time of the marriage, but within twelve months after marriage He suggested that if, for example, a woman went mad within six months of marriage that ought to be conclusive evidence to satisfy a Court that she was not really in a condition to give true assent at the time of her marriage —Lord ATKIN said that the suggestion was entirely contrary to principle Nobody ever heard of nullity on a ground which was not existent at the date of marriage There must be some ground which existed at the time of marriage, otherwise they would have divorce Unsoundness of mind might arise twelve months after the marriage through a cause which had nothing in the world to do with the condition of the marriage It might be the result of childbirth, and it was not an uncommon consequence of childbirth —Lord DAWSON said it was a rather narrow issue which was raised by Lord Cecil It was well known that mental disease might be so latent that it might be an unknown ground of suspicion If it remained a suspicion then nullity would not obtain, but if in the consequence of things in that marriage the symptoms were manifest and fully developed six or eight months afterwards they were often quite able to say that these rather vague symptoms of the earlier time of the marriage were really nothing but the beginning of a disease that was then in its initial stage He thought on that ground the bulk of scientific opinion would be with Lord Cecil, but clearly in order to establish that case the Court would have before it experienced scientists who would be able to give evidence as to whether that was true in the particular case or not —Viscount CECIL OF CHELWOOD asked those in charge of the Bill whether they would consider before the Report stage some provision to the effect that if one of the parties went mad within a year that should be prima facie evidence, which could be rebutted, of unsoundness of mind at the time of marriage —Lord ELTISLEY said that they were quite prepared to consider the matter, and the amendment was withdrawn

Lord GORELL moved an amendment to make paragraph (*b*) of the clause read as follows —

> " (*b*) that either party to the marriage was at the time of the marriage of unsound mind, a mental defective within the meaning of the Mental Deficiency Acts 1913 to 1927, or subject to recurrent fits of insanity or epilepsy "

He said his point was that mental deficiency, if it was a ground for nullity should exist at the time of the marriage He thought that the clause was originally designed to meet the case of a person who was mentally deficient at the time and then was placed under restraint twelve months afterwards He understood that that would lead to the very undesirable result that some unscrupulous person might marry someone who was mentally deficient, obtain their money, then get them placed under restraint within twelve months and have the marriage annulled The amendment was agreed to

Lord DAWSON moved an amendment providing that it should be a ground of nullity if either party to the marriage had been within twelve months prior to the time of the marriage guilty of the practice of homosexuality The noble viscount said he would not repeat the arguments which he had put forward earlier in the evening, but he moved this amendment because he thought it was of even greater importance where a question of nullity was concerned, because homosexuality might very easily not be manifest, and could not be manifest in the social circumstances prior to the marriage On Lord ELTISLEY'S request the amendment was rejected

Lord DAWSON had handed in a manuscript amendment to insert the word " communicable " before venereal disease in the clause He said that this amendment raised a matter of considerable difficulty If they left out suffering from venereal disease they might land themselves in the position that some one might have had venereal disease which some authorities regarded as not being cured notwithstanding the fact that its manifestations had passed. That would be met by inserting the word communicable On the other hand suppose at the time of the marriage one of the spouses had a very early stage of locomotor ataxy which might easily remain undetected unless there was a special examination It would be rather serious if the marriage could not be voided if, for example during the months subsequent to the marriage the disease developed He did not see the solution of that at the moment but with their Lordships permission he would consult with his professional friends in order to see if anything could be done to meet the difficulty With that reservation he would not move the amendment at this stage.

The Marquess of Reading moved an amendment to prevent a husband by forcibly having marital intercourse with his wife destroying her right to apply to the Court to have the marriage annulled. Lord Eltisley accepted the amendment which was agreed to

Lord Atkin moved an amendment providing that any child born of a marriage avoided pursuant to the paragraphs on the clause dealing with unsoundness of mind and venereal disease should be legitimate notwithstanding that the marriage was so avoided

Lord Eltisley accepted the amendment which was agreed to and Clause 6 as amended, was ordered to stand part of the Bill.

The remaining clauses were also ordered to stand part of the Bill and the Committee stage was concluded

NOTES ON CURRENT TOPICS

Road Accidents

On July 9th in the House of Commons Mr Burgin Minister of Transport reviewing the work of his Department during the year said that a most important development in connexion with the administration of road traffic had been the appointment of accident officers in each district whose duties were to log accident statistics under certain arrangements with local authorities and the ascertainment of causes with a view to prevention and to remedial measures being taken. During the last calendar year there were killed on the roads in Great Britain 6561 persons Of this total 3068 were pedestrians 1498 pedal cyclists, and 1076 riders of or passengers on motor cycles It was rather distressing to find the very large percentage of breaches of one or other of the elementary provisions of the Highway Code that were frequently committed by a large number of users of the highway While not imputing blame his desire was to invite the coöperation of all who used the roads to realise that this was not a pro-motorist contra pedestrian problem. He was hoping that by giving attention to the logging of road facts the public would become increasingly alive to the advisability of greater care It was now established beyond all contradiction that the taking of remedial measures reduced the number of street accidents, and he thought there should be more remedial measures There was no ground for complacency as to what had happened this year up to date on the roads There was an increase both in killed and injured and the increase was most marked among pedestrians There were 150 000 more motor vehicles on the roads than there were at this time last year and in terms of percentage that was nearly 6 per cent more vehicles on the roads of this country Most of the accidents were preventable; there was only a very small portion of them that was not so During the first half of 1936 41 per cent of the pedestrians killed or injured were under 15 and the graph of the fatal accidents which was kept in his Department showed that a very pronounced accident peak occurred at the age of about five The peak period of danger for pedal cyclists was roughly 14 or 15—just when the boys and girls were for the first time beginning to use pedal cycles on the roads. It was significant that this relaxation of control prior to a full appreciation of the danger of being on the road at all was the moment at which the maximum number of accidents occurred He thought that parents had an obvious responsibility in this matter of the safety of their children.

In the House of Lords on July 12th the Physical Training and Recreation Bill was read the third time and passed.

In the House of Lords on July 13th the Royal Assent was given to the Methylated Spirits Sale by Retail (Scotland) Act, the Trade Marks (Amendment) Act and the Physical Training and Recreation Act

QUESTION TIME

WEDNESDAY JULY 7TH

Distribution of Industrial Population

Mr Lawson asked the Prime Minister if he was now in a position to state the terms of reference and the personnel of the Royal Commission to inquire into the question of the geographical distribution of the industrial population —Mr Chamberlain replied Yes Sir *The King has* been pleased to approve the setting up of a Royal Commission to inquire into the question of the *geographical* distribution of the industrial population *The terms of* reference are To inquire into the causes which have influenced the present geographical distribution of the industrial population of Great Britain and the *probable* direction of any change in that distribution in the future to consider what social economic, or strategical disadvantages arise from the concentration of industries or of the industrial population in large towns or in particular areas of the country and to report what remedial measures, if any should be taken in the national interest

The members of the Commission are The Right Hon Sir Montague Barlow Bt K.B E. LL.D (chairman); Prof Leslie Patrick Abercrombie F R I B.A; Mr Ernest Bevin Mr Francis D Arcy Cooper Mrs Hermione Hichens A.R.R C Mrs Margaret Neville Hill; Prof John Harry Jones Sir Francis Joseph K.B E J.P D.L. Mr Parker Morris Sir Arthur Robinson G C.B., C B.F Mr Sydney Arthur Smith F.S.I. F.A.I Mr George W Thomson and Sir William Whyte O.B E

THURSDAY JULY 8TH

Independent Medical Examination of Motor drivers Charged with Drunkenness

Sir John Mellor asked the Home Secretary whether any and what instructions were given to police authorities as to the right to examination by an independent doctor of a man detained on a charge of driving a motor-car while under the influence of drink —Sir Samuel Hoare replied: All police forces have instructions that if a prisoner in custody on a charge involving drunkenness desires to be examined by a doctor selected by himself the request is to be complied with on the understanding that the prisoner will be responsible for the doctor s fee

Sir J Mellor Is the prisoner informed of his right to the examination at the time it is decided to send for the police surgeon and will my right honourable friend agree that it is most important that if possible an independent doctor should be present at the time of the examination by the police surgeon?

Sir S Hoare: I am not sure whether that is the case or not I think I had better have notice of that question

Health Insurance and Dental Benefit

Mr Joel asked the Minister of Health the cost of providing dental benefit as a statutory benefit and whether there were any approved societies which now supplied it —Sir Kingsley Wood replied: The cost of providing dental benefit as a statutory benefit cannot be estimated with precision in the absence of reliable data regarding the number of insured persons who would apply for treatment Such information, however, as is available indicates that about 10 per cent would apply for treatment each year at an average cost of about £4 per case On this basis the cost would be approximately £7,000,000 a year Dental benefit is provided as an additional benefit by 5000 approved societies and branches in England and Wales with a total membership of 11,800,000 representing 75 per cent of the insured population, and the expenditure on this benefit in 1936 was about £1,750,000

Medical Benefit

Mr Joel asked the Minister of Health how many persons insured for health under the State scheme had, within the past 12 months, not selected any panel doctor, how many had not needed the services of their panel doctor, and what was the average number of attendances of those who had utilised the services of their different panel doctors —Sir Kingsley Wood replied The number of persons who have been insured for 12 months without selecting an insurance doctor is not available, but the number of insured persons at any given time who have not selected a doctor although entitled to do so is about 495,000 in England and Wales As to the second and third parts of the question, a recent sample investigation of the official records kept by doctors showed that 48 per cent of the persons who had been on doctors' lists throughout 1936 had not been seen in the year and that the number of attendances, including home visits, per patient seen during the year was 7 1

Menace of Rheumatism

Mr Edward Dunn asked the Minister of Health what measures he proposed to adopt, if any, to combat the growing menace to health caused by rheumatism, the number of insured persons chargeable to the insurance fund for the years 1934, 1935, and 1936, what had been the cost, and the number of working days lost, due to this disease —Sir Kingsley Wood replied Treatment for this varied and complex group of diseases is available at most of the voluntary general hospitals and the general hospitals owned by local authorities, and there are a number of institutions which specialise in the treatment of certain rheumatic diseases I shall continue to give careful consideration to this matter, but at present I do not propose to introduce any special schemes which would supersede the progressive and increasing provision now being made to combat and study the disease and with which my medical advisers are in close association I regret that the information asked for in the last two parts of the question is not available

Increasing Shortage of Nurses

Sir Robert Rankin asked the Minister of Health whether his attention had been called to the increasing shortage of trained nurses and probationers, and whether in view of the great expansion of the hospital system and public health services of the country in the last ten years, he could state what steps were being taken to ensure an adequate supply of nurses during future years —Sir Kingsley Wood replied Yes Sir I have been informed that there is a shortage of nurses relatively to the increased demands for their services The matter is receiving my close attention and I understand that the associations representing local authorities are in communication with the General Nursing Council regarding certain measures for meeting the situation

Miss Wilkinson Has the Minister called the attention of the voluntary hospitals to the necessity for reducing the hours and increasing the wages of their nurses, if they wish to get a sufficient number ?

Sir Kingsley Wood This is an important matter, and I think that many hospitals are doing what they can about it

Midwifery Schemes in Wales

Mr Temple Morris asked the Minister of Health the number of *midwifery schemes which had been submitted* to him for any of the districts in Wales, and which of these schemes he had sanctioned —Sir Kingsley Wood replied Proposals under Section 1 of the Midwives Act, 1936, for a service of salaried midwives have been submitted by all the local supervising authorities in Wales, numbering 19 My formal sanction is not required to these proposals, but in three cases I have already informed the authorities that in my opinion their proposals are satisfactory, and in these and other cases the authorities are proceeding to put the proposals into operation In some cases I am still in communication with the authorities regarding particular points affecting their proposals

FRIDAY, JULY 9TH

Silicosis

Sir William Edge asked the Home Secretary the number of cases of silicosis recorded in the country as a whole during 1936, and the number of such cases in Leicestershire —Sir Samuel Hoare replied The total number of certificates of disablement or death from silicosis issued by the Medical Board in 1936 was 727 including 197 certificates in respect of death I regret that information as to the number of cases in Leicestershire is not available

MONDAY, JULY 12TH

Ex-Service Men and Medical Treatment

Mr Thorne asked the Minister of Pensions if he could give the House any information as to the demand made by him from an ex Service man for £25 12*s* 6*d* for medical treatment which was authorised and sanctioned by the Ministry, if he was aware that the man was under the control of the East Ham pension committee and had been entitled to insured medical benefit since July 1931, why was the payment now demanded, if he was aware that the committee declared that the demand was illegal, and what action he intended taking about the matter —Mr H Ramsbotham replied The Royal Warrants allow me to bear only such expenses of treatment as are not otherwise provided for Periodical payments of medicines obtained by this officer have been made on the written undertaking given by him that if he became eligible under the National Health Insurance Acts he would inform the Ministry *It has recently been disclosed by him that he* has been so eligible since July, 1931, and, at the officer's *request, the Ministry is prepared to postpone recovery of* the charges which were improperly imposed on public funds until September next when deductions from pension by small quarterly payments will commence

Health Insurance Sickness Benefit

Mr Hepworth asked the Minister of Health whether any special inquiry was being made by his department into the alleged existence of an exceptionally large number of applications for sick benefit, especially among women, and whether any *conclusions had hitherto been reached* —Mr Bernays Parliamentary Secretary to the Ministry of Health replied An investigation is being made by my Department in conjunction with the Department of Health for Scotland, into the general question of the expenditure of approved societies on disablement benefit, but no conclusions have yet been reached

TUESDAY, JULY 13TH

Working Hours of Pension Hospital Staffs

Mr Kirby asked the Minister of Pensions the number of hours per week normally worked by the indoor and outdoor staffs, respectively, of those hospitals and institutions controlled by his department —Mr H Ramsbotham replied The hours worked weekly by hospital staffs vary with different grades Nurses duties vary from 57–61 hours a week for day duty and 78 hours for night duty, both inclusive of meal times Massage staff and X ray assistants attend for 36 and 35 hours respectively, exclusive in both cases of meal times Stewards, clerks and orderlies are employed from 44–48 hours and domestics from 48–72 The only staff on outdoor duties are orderlies employed as gardeners, ambulance drivers, &c, who are subject to a 48 hour week

THE LANCET 100 YEARS AGO

July 15th 1837 *pp* 569 *and* 580

From a lecture on Materia Medica and Therapeutics delivered at the Windmill street School of Medicine by DR GEORGE G SIGMOND

In the coming on of consumption there is one great and never to-be mistaken symptom the state of the pulse which too often escapes observation, but which reveals more than does the cough the loss of strength the emaciation of the body It is singular that this the pathognomonic symptom, which is peculiar to pulmonary affection so often passes unheeded that many of our best writers merely mention its quickness and that in the present day some of those authors on diseases of the chest who will hereafter be ranked among our classic medical authorities devote so little attention to a diagnostic mark of such value—one which, in my mind is of fully as deep importance as the signs that are conveyed to the sense of hearing by the stethoscope or by percussion. It has been generally acknowledged that certain individuals are incapable of the nice tact of distinguishing disease by the pulse That here are many shades of distinction which can be perceived by but few I have little doubt but I think that the principal obstacle we have to encounter is the conveying to others the sensations which are excited in our own mind The indication of consumptive tendency by the pulse is much more easily recognised than it is explained to another It is not that which is attendant upon fever It has neither the strength nor the hardness of the inflammatory nor has it the weakness nor the smallness which belongs to low fever and in both of which states there may be increased celerity of the pulse there is tension but it is not the whipcord feel of inflammation there is a vibration but it is essentially distinct from that which betokens disease of the heart It is extraordinarily dependent upon mental emotion, and its rapidity is excited by moral causes in a most surprising and unaccountable manner

From a letter to the Editor from GEO RAY M R C S *of Milton Kent dated July 6th* 1837

SIR —The time is fast approaching when cases similar to the one which I am about to narrate will have been so common as to render it a work of supererogation to record them

My eldest son, a healthy boy born in Feb 1823 was the subject of congenital club foot All that skill could suggest or contrive was tried in vain, for at the end of fourteen years and two months the boy appeared to be doomed to irremediable lameness I had heard that Dr Stromeyer of Hanover had divided the tendo achillis but notwithstanding the most diligent inquiry I could not learn that the operation had ever been attempted by an English surgeon. Great then, was my delight on reading in THE LANCET of April 1st 1837 an account of the discussion of Mr Whipple s case before the *Royal Medical and Chirurgical Society*

On the 1st of May Dr Little divided the tendo achillis about an inch-and-a half above the malleolus by introducing a very narrow slightly-curved bistoury between the tendon and the deeper-seated muscles and tibial vessels directing the edge of the knife against the front of the tendon dividing it from within outwards leaving the skin covering the tendon untouched Any separation of the divided ends of the tendon was prevented by placing the foot in its deformed position upon a stiff paste board splint applied along the outer side and by adjusting the limb with the knee bent upon a pillow

4th day The puncture firmly cicatrized and Stromeyer's foot-board applied The boy is perfectly well

10th day The bending of the foot upon the leg have been gradually continued so that the foot at present is nearly at a right angle with the leg and all this has been affected without pain He has been able for the last two or three days to walk about the room.

19th day Today the use of Stromeyer s foot board is partly discontinued and he wears in its stead Scarpa s shoe which tends better to overcome the too great curvature of the bones of the tarsus now that the foot is bent to the right angle

At the end of six weeks and a few days my son returned home and has since been steadily improving He continues to wear Scarpa s apparatus by night and during the day a common laced boot with an iron stem on the outside of the leg his lameness is very slight and becomes less daily

OBITUARY

AUGUSTUS ROLLO BALMAIN, M D Lond D P H

Dr Balmain who died of heart failure while abroad on a motoring holiday had been deputy medical officer of health for Ilford for the past nine years Born at Plymouth in 1890 he was educated there and at Birmingham University going on to the Middlesex Hospital from which he qualified M B B S Lond in 1916 He then served in the R.A.M.C accompanying the East African Expeditionary Force with the rank of captain. After taking the D P H at Oxford he became assistant medical officer of health in turn for Somerset, Birkenhead and Colchester In 1927 he went to Ilford as senior assistant and in the following year was appointed deputy, For some years he had charge there of the diphtheria immunisation clinics and of the open air school and was inspector of nursing homes and of massage establishments. His contributions included several important papers on immunological problems written in collaboration with Dr A. H G Burton Balmain writes Dr Burton had a fine knowledge of modern medical work and was himself a doctor whose opinion could be implicitly relied upon on any medical matter He collaborated with me in a good deal of research work and records of cases which would have been quite impossible for me to have carried out without his assistance He was a loyal colleague ever anxious to assist any members of the staff Dr Balmain married May daughter of William Girling who survives him

HENRY ARMSTRONG

THE death of Prof H E Armstrong F R.S on Tuesday in his ninetieth year ends a remarkable career which touched medicine closely He had studied under Ludwig in Leipzig and worked at the medical school of St. Bartholomew s Hospital before being appointed to the chair of chemistry at the old London Institution in Finsbury-circus. He used to say himself that had he realised that medicine was a branch of chemistry it would have had his life long allegiance As it was, he initiated the work which led to our conception of the action of enzymes and if it were desired to express his life work in a phrase it would be as a master enzyme For under Armstrong and his associate Ayrton the City and Guilds College at South Kensington became a training school of students in the methods of experimental inquiry After his retirement from collegiate life he remained a constant stimulus to heuristic teaching—namely the method of educating students to find things out for themselves—and to the end of his life he was a thought provoking contributor to the columns of *Nature*

LEVERHULME RESEARCH GRANT — A Leverhulme research grant has been made to Dr D Elliot Dickson colliery surgeon at Lochgelly Fife for an investigation into occupational morbidity in coal miners

MEDICAL NEWS

Royal College of Surgeons of England

A quarterly meeting of the council was held on July 8th with Sir Cuthbert Wallace, the president, in the chair He was re-elected president and Mr Victor Bonney, vice president, and Prof G Grey Turner was elected vice president for the ensuing year Mr C H Fagge, Mr W Sampson Handley, and Mr Cecil P G Wakeley were admitted to the council

Sir Hugh Acland, of New Zealand, brought to the council a message of greeting from the Royal Australasian College of Surgeons, to which college a message is being taken by Prof Grey Turner

The Hallett prize was awarded to Dr A J Innes (Edinburgh) and the eighth Macloghlin scholarship to David Somerset Short of Bristol Grammar School The following professors, lecturers and demonstrators were elected for the ensuing year *Hunterian Professors* Mr P B Ascroft, surgical treatment of arterial hypertension, Mr H J B Atkins, chronic mastitis Mr J I Munro Black, lympho-epitheliomata, Mr R C Brock, pathology, diagnosis and treatment of intrathoracic new growths, Mr Maxwell Ellis, function of the bronchial tubes, Mr T Stewart Heslop, the neurogenic origin of peptic ulceration, Mr J Cole Marshall, detachment of the retina and the modern operative treatment, Mr T W Mimpriss, histology and treatment of imperfect descent of the testis, Mr R T Payne, cancer of the stomach as a surgical problem, Mr Harold Rodgers, gastroscopic appearances of the "normal" gastric mucosa and its constitutional variations, Mr T F Todd, rectal ulceration following irradiation treatment of carcinoma of the cervix (pseudo carcinoma of the rectum), and Mr W E Underwood, recent observations on the pathology of hydronephrosis *Arris and Gale Lecturer* Dr John Beattie *Erasmus Wilson Demonstrator* Dr L W Proger *Arnott Demonstrator* Dr A J E Cave

Dr Proger was reappointed pathological curator of the museum, Sir Frank Colyer hon curator of the odontological collection, Mr C J S Thompson, hon curator of the historical collection, and Dr David Slome, a Mackenzie Mackinnon research fellow Mr C I Pocock, B Sc, was appointed the Charles Ryall library research assistant from Oct 1st The following assessors were appointed for the primary examination for the fellowship of the College which is to be held overseas during the coming year —

Australasia Melbourne—Prof F Wood Jones F R S. and Dr C H Kellaway Sydney—Prof A N St G Burkitt and Prof W N Davies Dunedin—Prof W P Gowland and Prof J Malcolm

India Lieut Colonel F J Anderson and Lieut -Colonel S L Bhatia

Egypt Prof D E Derry and Prof. Gleb von Anrep F R S

Under the Moynihan bequest the council decided that not less than three or more than five lectures on the results of research in its application to surgery shall be given in alternate years by a lecturer who shall be styled the Moynihan lecturer The offer of Mr W Laurence Cripps, of some of the original microscopic drawings belonging to his father, Mr W Harrison Cripps, was accepted by the council

A diploma of membership was granted to W B Foster of St Bartholomew s Hospital and licences and diplomas were granted jointly with the Royal College of Physicians to the following candidates —

L.D S—A E L Adeline F P Alford W C Allwright G A E Argo G C Blake J M Burnup R W Caldwell Pamela B Chalk T L Clark N M Cripps C M W Debenham J F van de S De Villiers Mary C Dixon Michael Frost Munro Goldfield, D L Goodridge A H Guest R P Hancock D W Harvey J F Herbert K J L Hollington J D Irvin A R Levy A. H Mikhail Franz Mosbacher R B Neal G C J Pearce D A Priestley A D W Robertson D B Sedgwick David Sigaloff R M J Siman E A Syder F J Summers J R P Thomas J E C Thorpe F A Trent W H West T L Weston P D Wharton Ronald Wyer and F J Younger

D P H—L J Bacon T F Jones Davies J MacC Kilpatrick A F Lorentzen Chandra Mani J N Matthews Doris Onions T B Patel and H E Raeburn

D P M—M B Brody, Hilda M Capes Bridget Coffey, E C Dax T R C Fraser J B Gillen W G Glassco, Joan E. Greenor Arthur Harris G T James C A. Keane J S Knox E H Larkin A B Monro, K N H Rizvi Kenneth Soddy J T W Spiridion Kliszczewski C E H Turner, and G P B Whitwell

D L O—G N Barker G A Fraser K. H Hakim Montó Jackson, J A Kersley and G P Rayen

D A—M C Canguli R E Pleasance A F Potter W B Primrose and William Sankey

University of London

At recent examinations the following candidates were successful —

D P H

J K Adranvala Beatrix H Bakewell Lalage R A Benham, D M Blair Kathleen G Brimelow P N Chatterjee *A B Christie, Kitty K. Conrad J S Cookson, Teresa I M Craig Iris M Cullum C F Cumings Enid S Davies B K de Silva Samuel Graham Eva M Gray, E H Harte R M M Hunter, J D Lendrum, S E D Masilamani, B B Mukerjee Douglas Murray, A. F S Perera Violet M Spiller Margaret B Steel Tsung Sing Sze *J W P Thompson A F Turner V M Vatve, Sarah C B Walker L A F Wiles and Isabel A M Woods

*With distinction

Mr R J Kellar has been appointed to the university readership in obstetrics and gynæcology tenable at the British Postgraduate Medical School

Mr Kellar is 28 years of age He was educated at George Watson s College Edinburgh and studied in the University of Edinburgh where he obtained the M B in 1931 when he was awarded the Buchanan scholarship in midwifery and gynæcology the Annandale gold medal in clinical surgery the Wightman prize in clinical medicine and the Murchison scholarship in medicine Since graduation he has held a Freeland Barbour fellowship in obstetrics a Leckie Mactier fellowship in medical research and is at present the holder of a Beit memorial fellowship After graduation he was in general practice for some months and later held hospital appointments at the Royal Infirmary and at the Royal Maternity Hospital Edinburgh For three years he held the posts of gynæcologist and obstetrician to the Provident Dispensary and later to the New Town Dispensary in Edinburgh and for some months during that time he acted as assistant gynæcologist to the Deaconess Hospital In 1935 he became assistant in the obstetric unit at University College Hospital, where he has been in charge of the postnatal clinic and of the pathological work he is also carrying out experimental work at the Buckston Browne farm of the Royal College of Surgeons He is a member of the Royal College of Physicians of Edinburgh and of the British College of Obstetricians and Gynæcologists and a fellow of the Royal College of Surgeons of Edinburgh His published papers include reports of experimental work on renal hypertension and nephritis

Mr Girling Ball has been elected chairman of the Brown Animal Sanatory Institution Committee for 1936–37

University of Manchester

At recent examinations the following candidates were successful —

M D

J R P Edkins

FINAL EXAMINATION FOR M.B AND CH B

L S Anderson J C Babbage, I W Ball R S A Beckett G H H Benham Muriel L Bennett M J Blank Tom Dinsdale J H Ferguson J H France Rosaline Green A B Hamer R S P Hawkins F G Hibbert W S Holden Thomas Holme William Ingman Monica M Job, Katharine I Liebert J R Monks H N Osborne Nydia E Panton A F Pearson W H Purves W A Robson Nina Shtetinin T S Stewart, Fred Stratton and Norman Whalley

Part I (Forensic Medicine and Hygiene and Preventive Medicine)—Norman Altham J N Appleton Muriel I R ApThomas H B Austin T M Brand W W Burnett T E A Carr J E Coates A E David D B H Dawson, T B S Dick A M Dickson Gerald Garmany, A B Hamer, Kenneth Harrison, Kathleen M Henderson A G Heppleston C P Heywood Barbara M Jessel F A Langley Norman Levy Louis Linnell Donald Longbottom Joan Mason J C Mellor Arthur Morgan Jones Sidney Mottershead T H Norton Mary B Oakden Lilian P Parry, J K Rowson Edward Saunsbury M R Tomlinson T B Whitehead W W Wilson, and Frances T Wright

University of Aberdeen

On July 7th the following degrees were conferred —

D Sc—A W Downie and H E Shortt (in absentia)

M D—*H W Fullerton *E. J R Leiper Helen M Jardine John Leiper J S Walker and D E Wilson (in absentia)

Ch M—*J F Philip

* With honours

M B Ch B—E K Cruickshank J G Macarthur Alexander Macdonald R F Macdonald J A F McLean Donald Matheson E E P Murray and A W Souter (with second class honours) A. S Ashby H W Balch J A Barclay F B Bright W M Burgess R McN Cadenhead A S Cameron Margaret D Cameron R W Catto Margaret R Clark Enid M M Clow Albert Coull J B Cruickshank D J Cusiter A. M Davidson

D J Dawson L H Duthie A H Emslie-Smith J K Farquharson Mary L Forbes F W Fyfe E N Gauld M S Glassman, Jamesina Gordon R M Gordon Denis Harkins William Herbert E A Horne John Innes Alexander Jamieson Phyllis D Leslie, C M Liddell, J G T Lunn R J L MacKean Robert McDonald J F Mackay J A McKenzie, Jessie M McKenzie Alan McKerlie J M McKiddie G S M Mackintosh J M Mair, Peter Matheson Isabel M Mathieson G N Miller S J H Miller, Adam Milne L McD E Milne Marian B Milne P C Mitchell R D Monteith J J T Morrison A F Murray F S Rae D D Reid G L Ritchie Margaret Robertson John Ross George Sangster W A McD Scott William Selbie Jean McK Sheach Elizabeth M M Simpson John Slorach William Smith Florence Stephen G A Stephen I C Stephen Henry Tatton Hilda M Teunon, Elsie J Thomson W J F Treacher G B Will Isabella M Will S C Wright and A G B Young

D.P.H—W J Hogg

University of Glasgow

Dr Noah Morris has been appointed regius professor of materia medica in the University in succession to Prof Ralph Stockman who has resigned

Dr Morris who is 43, was educated at Glasgow High School and Glasgow University where he graduated B.Sc with special distinction in 1913 Two years later he obtained the M B degree with commendation He took his doctorates of medicine and science in 1921 and 1931 respectively During the war he served in France and Italy as a captain in the Royal Army Medical Corps. He has held the appointments of Muirhead demonstrator and assistant to the regius professor of physiology in the University of Glasgow and the chair of physiology at Anderson College He holds his present post of lecturer in biochemistry in relation to diseases of infancy and childhood jointly under the university and the Royal Hospital for Sick Children Glasgow to which he is also biochemist Dr Morris has acted as examiner in physiology and biochemistry for the Scottish Conjoint Board and also for the fellowship of the Royal Faculty of Physicians and Surgeons of Glasgow His published work includes papers on the metabolism of cœliac disease

University of Dublin

At recent examinations in the School of Physic Trinity College the following candidates were successful :—

M.D

A J O'Connor J B Patrick H T Ryan and W C Sloan.

FINAL MEDICAL EXAMINATION FOR M.B. B.CH AND B.A.O

Therapeutics and Pathology—M O'C Drury and F L Willington (first-class honours) Sylvia M Hall, C B Robinson M E Tapissier, Frank de Burgh Whyte, R G P Heard, E G Hobart R S W Baker Kathleen Dowling and W A J Pike (with second class honours) W B Dennehy E G Millar O J Du Preez, Muriel Bannister J K Craig, N J Hogan J C G Moore, A C Corbett N C Brown, W F Carpenter C W Bradfield, Matthew Daly J L Handelman J C de R Sugars, Patricia D Concannon, J P Gore-Grimes D A Huggard, G V Anderson Lucia M E FitzGerald, Edward Cullen, J W Boland, and C H Rutherford

Medicine.—M C Brough and Cecil Mushatt (with second class honours) J A Strong F O Heatley Grace M Wild M C Wood, Charles Cunningham J N G Drury, J E Gillespie J C Lambkin J G Nixon H J Walker, E M G Cochrane S G Heaton, H F T MacFetridge, A D Parsons Robert Pollock, G N MacFarlane J H Mitchell Jasmine Taylor Patricia M J Conway J M C Caldwell, R E Taylor, J B Plews Maureen N S Mason, E G Fox, Stella M Coen Frances M C Wolfe C M Ludlow, and Jack Freedman

Surgery—Robert Pollock (with first class honours) J A Strong G N MacFarlane H M Carson, H J Walker J E Gillespie, and William Hayes (with second-class honours) H F T MacFetridge, M C Wood R E Taylor, R W Duncan M C Brough, F C Heatley H F Sloan E R V Cooke Cecil Eppel E G Fox, Charles Cunningham J C Lambkin C J S Flood J H Mitchell, Jasmine Taylor G K Donald W J G Warwick and A D Parsons

Midwifery—C H Blakham (with first-class honours) R C H Cooke William Jones H M V Buchanan W J E Pietersen Maureen N S Mason M D Thorp J M C Caldwell and Frances M C Wolfe (with second-class honours); Thaddeus Fallon J E Murphy F J B Convery B W Hughes Noel M'Sharry J F Rishworth, L A S Edmondson, Nathan Marks M D M Bergin Bridget P Mansfield and J T Speidel.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS

Ranajit Sinha D P Harris Kamala Narulker Durga Wazalwar and Elizabeth A Akerele.

D P.H.

Part I—J D Murray

Part II—T A Austin S G Rainsford, R L G Proctor H W Dalton and Mary S Miller

D P M.

Part I.—D T Hardon

The medical travelling prize and Bank's medal were awarded to Dr G J Dixon and the De Renzy centenary prize to Dr T A Austin

St Mary's Hospital

The annual dinner of past and present students of this hospital will be held on Saturday Oct 2nd at 7 30 P.M. at Claridge's Hotel. Mr V Zachary Cope will be in the chair

University of Cambridge

Gwynaeth Pretty Studentship—Applications for this studentship should be made to Prof H R Dean department of pathology before August 1st It is of an annual value of £200 and is tenable for three years The holder must undertake original research in the ætiology pathology and treatment of disease with particular but not exclusive reference to those diseases which cripple or disable in childhood or early life

Nita King Scholarship—The holder of this scholarship will be expected to devote himself to original research in the ætiology pathology and prevention of fevers It is of an annual value of £00 Applications should be sent to Prof Dean before August 1st

Rheumatism Consultation Centres

During the joint congress of the International League against Rheumatism and the International Society of Medical Hydrology to be held at Oxford next March there will be an exhibition of projects (drawings models &c) for consultation centres for rheumatic patients Particulars may be had from the hon secretary of the League Dr J van Breemen Keizersgracht 489 Amsterdam

Industrial Welfare Society

A lecture course in industrial law has been arranged by this society and will be held at its headquarters 14 Hobart-place London, S W 1 on Mondays at 6 30 P.M beginning on Oct 4th for ten weeks It will be conducted by Mr H Samuels barrister-at-law The syllabus includes lectures on industrial law the law of master and servant the Factory Acts employers liability and workmen's compensation trade unions and association national insurance taxation, and rating law in relation to labour management pensions funds and other forms of welfare elements of company law and law relating to shops It is suggested that the course should prove useful to industrial medical officers Further information may be had from the secretary of the society

Heatherwood Hospital Ascot

In 1935 the London County Council decided to enlarge this hospital at an estimated cost of £72,000 providing an extra 100 beds for children with surgical tuberculosis These children had formerly been sent to Princess Mary's Hospital for Children Margate which has now been converted into a much needed seaside convalescent hospital for London women. It was felt desirable that children with surgical tuberculosis should be in a hospital nearer to London and within easier reach of the Council's consultant and specialist organisation. Heatherwood Hospital which has 55 acres of grounds partly wooded and partly laid out as gardens was established in 1920 for children of ex Service men suffering from surgical tuberculosis and orthopædic diseases, and was made over to the Council in 1929 It originally consisted of three single storey ward blocks one for children of both sexes up to the age of seven and one each for girls and boys over that age with a light treatment block, workshops for the making of splints and surgical appliances a hospital school administrative buildings and staff quarters.

The new block which is now in occupation is a one storey double ward block for 100 patients planned for effective open air treatment The front of the block has glass shutters so arranged that the whole of the front can be opened to allow patients to have open-air treatment on days when the weather is uncertain. On brighter days it is possible for the beds to be wheeled on to a terrace New dayrooms for use with the existing ward blocks and covered ways to the hospital have been provided A new wing has been added to the nurses home to provide bedrooms for 56 nurses and maids and a sitting room for the maids; each nurse will now have a bedroom for herself A nurses training centre and a self-contained flat for the matron have been included in the home A portion of the isolation block has been set aside for sick nurses and the existing accommodation for them has been adapted as quarters for two assistant medical officers The store rooms the boiler house the laundry and kitchen, have been enlarged The new buildings were designed by the architect to the council Mr E P Wheeler F R.I B.A.

Scottish Board of Control

Dr R P J McBroom has been appointed a deputy commissioner of the General Board of Control for Scotland.

University College Hospital

Sir Herbert Samuelson, owing to ill health, has had to resign from the office of chairman and treasurer of this hospital, which he has held since 1927. Sir Courtauld Thomson has consented to act as chairman and treasurer until a successor is appointed.

Sanitary Inspectors' Association

The jubilee conference of this association will be held at Brighton from August 30th to Sept 4th. Sir Leonard Hill, F R S, will give a presidential address and Major Stuart Blackmore will deliver a lecture on air raid precautions and the public health services.

Course in Hospital Administration

A course of lectures and demonstrations on clinical practice and in hospital administration will be given at the Brook Hospital, Shooter's hill, Woolwich, S.E, by Dr J V Armstrong, on Mondays, Wednesdays, and Saturdays. The course will begin on Oct 4th and further information may be had from the medical officer of health of the London County Council, Public Health Department (Special Hospitals), County Hall, S E 1.

West London Medico-Chirurgical Society

The fifty fifth annual dinner of this society was held at the Trocadero Restaurant on July 7th, with Mr Neil Sinclair, the president, in the chair. The toast of The Society was proposed by Sir Gervais Rentoul, K C, who said he thought it strange that a lawyer and resident magistrate having a criminal jurisdiction covering West London should be the guest of such a respectable society. He drew a distinction between the exponents of medicine and of the law: the doctor was praised and the lawyer was reviled in public, while in private it was the reverse. Like John Buchan's character, "When anyone puts the fear of death into ye, ye aye speak well o' him." In his work he had often had cause to be grateful for the help of the medical profession in general and of the members of the society in particular. In its half century of life the society had done a great deal to encourage and stimulate scientific work, as well as to promote good fellowship, and it had served the public weal with great devotion. Mr Sinclair, responding, said that the past year had been a successful one. The most interesting event had been the society's move into new quarters at the West London Postgraduate College, after having been buffeted about from place to place for many years. He expressed the society's gratitude to Colonel W G Johns, chairman of the West London Hospital. Keetly, the founder of the society, had had great difficulty in persuading the board of the hospital to form the society but they met with very different treatment nowadays. Keetly was a very remarkable man, a surgeon far ahead of his times, and a first-class artist. His drawings had been presented to the society and they proposed forming a Keetly collection. Mr V B Green Armytage, proposing The Guests and Kindred Societies, quoted Dr Johnson's remark to Reynolds: "A man, Sir should keep his friendship in constant repair." It was Sir Gervais's profession that continually made mincemeat of the medical witness, but the surgeon and the barrister had two characteristics in common—great obstinacy and a greater optimism. The doctor had in addition four others: he need never practise what he preached, he was free to break the sixth commandment, he could bury his mistakes, and he alone was beloved. With the toast he coupled the names of the knight commander of the barbiturates, Sir William Willcox, and of the chevalier of the endocrine orchestra, Sir Walter Langdon Brown. After dinner the society entertained members and guests in what the president called its "coronation bust." As an alternative to a trip up the river a dance had been chosen, and with this the company gaily extended the occasion into the small hours.

Société Belge de Gastro-entérologie

A meeting of this society was held in Brussels on June 27th to discuss the medical and surgical treatment of gastric and duodenal ulcer. The speakers included visitors from France, Germany, Holland, and Switzerland, with Sir Arthur Hurst as one of the representatives of Great Britain.

The Tuberculosis Situation

On July 7th Sir Kingsley Wood, the Minister of Health, opened extensions to the Essex County Council's sanatorium at Black Notley. He said that tuberculosis was still responsible for more deaths annually than any of the principal diseases except cancer, and it produced its effects when the persons attacked should be enjoying a maximum amount of health and working capacity. The crude death rate from tuberculosis in England and Wales had been reduced from 1468 per million in 1911 to 692 in 1936, and the number of deaths in the same period had been reduced from 53,000 to 28,000—the lowest figure yet recorded—though the population had in the meantime increased. But all this progress must not blind us to the menace of the disease. A first-class, well managed sanatorium was not only a means of giving the best treatment possible but an invaluable engine of propaganda for the tuberculosis scheme in which it plays its part.

Venereal Diseases in Scandinavia

The Minister of Health, in accordance with an announcement recently made by him in the House of Commons, has arranged for two officers of his Department, Colonel L W Harrison and Mr D C L Ward, accompanied by Dr Margaret Rorke, director of the venereal diseases department at the Royal Free Hospital, to pay a short visit to Sweden, Norway, Denmark, and Holland, for the purpose of studying the systems in operation in those countries for combating venereal diseases. The party left London on July 12th and will be joined later by Dr T Ferguson of the Scottish Department of Health.

Mental Hospital Association

The Lord Mayor of London opened the nineteenth annual meeting of the Mental Hospital Association at the Guildhall on Tuesday, when Mr J C Grime presided. Sir Laurence Brock, chairman of the Board of Control, said that, while the general situation in mental hospitals was unaltered, overcrowding had increased. He referred to the steadiness of the recovery rate during the last 30 years and suggested two reasons for this lack of success: there were not enough doctors in the service, and they had inadequate facilities for study and research. At present the prizes fell to the successful administrator; mental research should be made a career which was worth while.

British Empire Cancer Campaign

Lord Horder presided at the quarterly meeting of the grand council held last Monday at the new offices of the Campaign at 11, Grosvenor-crescent, London, S W 1. On the recommendation of the scientific advisory committee the following grants were approved: £500 to Dr P M F Bishop, at Guy's Hospital, for one year of investigations on endocrine therapy in relation to cancer; £250 to Prof G I Finch, at the Imperial College of Science and Technology, for an investigation, on behalf of the committee, into the nature and structure of carcinogenic compounds; and £160 to Dr P R Peacock, at the Glasgow Royal Cancer Hospital, for the purchase of special apparatus. Dr G Cranston Fairchild was reappointed the William Morris research fellow in radiology at Mount Vernon Hospital for another year. A further grant was voted for 1937–38 for free educational lectures to the public in the counties of Bedfordshire, Berkshire, Buckinghamshire, Cambridgeshire, Essex, Hampshire, Hertfordshire, Huntingdonshire, Kent, Norfolk, Northamptonshire, Oxfordshire, Suffolk, Surrey, and Sussex. Although the scheme has only been in operation for a comparatively short time, 375 such lectures have already been given or arranged. Prof J McIntosh, director of the Bland Sutton institute of pathology at the Middlesex Hospital, was elected one of its representatives on the grand council.

Valuation of the Approved Societies

The Fourth Valuation of the 7000 approved societies and branches which administer National Health Insurance shows total surpluses of £37 500 000 of which £30 000 000 was carried forward from the Third Valuation. In a report issued on Tuesday (Cmd 5406 H.M Stationery Office) the Government Actuary says that £20 000 000 has been certified as available for the provision of additional benefits for nearly 15 000 000 members of 6000 societies and branches in the next five years It is estimated that this would suffice on the average to raise the normal cash benefits of these 15 000 000 members by about 20 per cent and also to permit of about 4s per member being paid annually for additional treatment benefits

Oxygen for Commercial Aeroplanes

An announcement is made that the Air Ministry intends to demand that commercial aeroplanes which fly at heights of more than 15 000 feet shall carry oxygen At the annual meeting of the American Medical Association last month Dr A. L Barach attributed recent accidents in the United States to oxygen want in the pilots He said that two hours flying at 15 000 feet impaired reason judgment control and memory (See THE LANCET July 3rd p 36)

Bristol Health Clinic

Sir Farquhar Buzzard on July 9th opened the new central health clinic at Bristol with which all district clinics will be linked The building has cost nearly £50 000

Travelling Fellowships in Tuberculosis

The Medical Research Council announce that they have awarded Dorothy Temple Cross research fellowships to the following candidates who intend to study problems of tuberculosis at centres abroad during the academic year 1937–38 :—

Brian Connor Thompson M.D Camb, formerly assistant tuberculosis officer Durham County Council (renewal of present fellowship for three months)

Ronald Herbert Robert Belsey M B Lond. F R C.S Eng resident surgical officer Hospital for Consumption and Diseases of the Chest Brompton London

Brian Maurice Maxwell M D Belf senior assistant medical officer Cheshire Joint Sanatorium Market Drayton.

Oswald Sydney Tubbs B Chir Camb. F R.C.S Eng chief assistant to surgical unit St Bartholomew's Hospital London

Enid Mary Williams M D Wales assistant lecturer in tuberculosis Welsh National School of Medicine Cardiff

Society for Relief of Widows and Orphans of Medical Men

At a quarterly court of directors held on July 7th Mr V Warren Low president being in the chair four new members were elected and the death of a member reported A donation of £4 15s was reported from the local medical and panel committee for the County of London The sum of £2413 15s was voted for the payment of the half yearly grants to the widows and orphans in receipt of relief; there are at present 61 widows on the books A committee was appointed to consider the best method of celebrating the 150th anniversary of the Society which was founded on Oct 29th 1788 Membership of the Society is open to any registered medical man who at the time of his election is resident within a twenty mile radius of Charing Cross Full particulars from the secretary at 11 Chandos-street London W 1

Scottish Medical Golfing Society

The society held their summer week-end meeting at Princes Golf Club Sandwich on July 10th and 11th The results of the competitions were as follows :—

Singles v Bogey—1st Dr Bruce Williamson (12) 3 down 2nd Sir Lancelot Barrington Ward Drs. Bertram Shires Keith Forbes Desmond Curran and Walter Maclay tied: 4 down

Four-ball v Bogey—1st Drs. Bartleman and Curran 5 up, 2nd Drs Maclay and Gordon and Drs Bruce Williamson and Keith Forbes 3 up

The Medal Round was won by Dr Curran (17) 73 (7) with Dr Donald Paterson second (18) 75 and Mr Rupert Scott third (9) 76

The Silver Haggis for the best eclectic score was won by Dr W A Low 86–18 = 68

In addition to the above there were various hidden prizes

Appointments

BANKS A. L. M.D M R.C.P Lond D P H has been appointed Medical Officer at the Ministry of Health.

COCKBURN CHARLES M B Aberd D O M.S Hon. Assistant Ophthalmic Surgeon to Aberdeen Royal Infirmary

DAVIES, DORA, Melb Resident Medical Officer at Luton Maternity Hospital

FELDMAN, J A. M.R C.S Eng. Assistant Medical Officer at Menston Mental Hospital Yorks

GILMORE, E. R. M D Manch. D T M. D P H Medical Officer of Health and School Medical Officer for Leamington Spa

MUTCH J R. M.D Aberd D.O.M.S Hon Assistant Ophthalmic Surgeon to Aberdeen Royal Infirmary

PEARSON N F M.R.C.S. Eng D P H Deputy Medical Officer of Health and Deputy School Medical Officer for Luton

RAEBURN H A M D M.R.C P Edin. D P H Medical Officer at the Ministry of Health.

RANKINE, J E. M.B Glasg., D P.H Assistant Medical Officer and Assistant School Medical Officer for Blackpool

TAGGART H J M B Belf, F R C.S. Eng D O.M S. Ophthalmic Surgeon to the Hospital of St John and St. Elizabeth, London.

WARIN, J F M D Leeds D P H Assistant School Medical Officer and Assistant Medical Officer of Health for Blackburn.

WEIR J A. M.B Glasg., Resident Surgical Officer at the Royal Infirmary Sunderland.

WINNER ALBERTINE L., M.D, M.R.C.P Lond. Hon. Assistant *Physician to the Elizabeth Garrett Anderson Hospital.*

Radcliffe Infirmary Oxford—The following appointments are announced :—

ARMSTRONG, R. W M.D Belf. D.P.M Honorary Physician to the Department of Nervous Disorders;

NATTER F J M.R.C.S Eng D P.M Honorary Assistant *Physician to the Department of Nervous Disorders*,

HANDFIELD-JONES ELIZABETH M M.R.C.S Eng D.A. Honorary Anæsthetist and

ALSOP, A. F B Chir Camb, Hon. Anæsthetist

Royal Sussex County Hospital Brighton—The following appointments are announced :—

HINGSTON C. L., M.R.C.S. Eng. D.P M Hon. Medical Officer to the Early Nervous Disorders Department

WILLIAMSON J C. F L. M B Camb. F R C.S Eng. Hon Surgical Registrar, and

FRASER G A. M.B Edin. D.L O Hon. Surgical Registrar

Certifying Surgeons under the Factory and Workshop Acts: Dr F W CLARK (Innerleithen District Peebles) Dr G. SIMPSON (Hessle District, Yorkshire East Riding), Dr G THOMPSON (South Cave District Yorkshire East Riding)

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary—Gynæcological Registrar

Ashton under Lyne District Infirmary—H.S at rate of £150

Ayrshire Sanatorium Glenafton New Cumnock.—Med Supt £600

Banbury Oxon Horton General Hosp—Res. M.O at rate of £150

Bath, Royal United Hosp—H.P at rate of £250 Also two H.S.'s to Spec. Depts. each £150

Bedford County Hosp—H.S at rate of £150

Birmingham Children's Hosp—Res Surg O £175 Also H.P and H.S, each at rate of £75

Birmingham City—Asst. M O for Maternity and Child Welfare £500

Birmingham, Dudley road Hosp—Asst. Pathologist £650

Birmingham Little Bromwich Hosp for Infectious Diseases—Two Jun. Res. M.O's each £300

Blackburn Royal Infirmary.—H.S., £175

Board of Education, Whitehall S W—Dietitian or Nutritionist £500

Bolton Royal Infirmary—Two H.S.'s, each at rate of £150

Bolton Townleys Hosp Farnworth.—Asst. M.O £250

Bradford New Royal Infirmary—Res M O and Asst Pathologist, £225

Bradford Royal Eye and Ear Hosp—Two H.S's each £180

Brighton, Royal Sussex County Hosp—Cas. H.S. £120

Bristol City and County—Asst. M O H., £500

Bristol Southmead Municipal General Hosp—Deputy Med. Supt. £500

Cambridge Addenbrooke's Hosp—Res Anæsthetist and Emergency Officer at rate of £130

Canterbury Kent and Canterbury Hosp—H.S at rate of £1?5.

Carlisle City—Asst. M O for Maternity and Child Welfare £600

Carlisle, Cumberland Infirmary—H.S £155

Chesterfield and North Derbyshire Royal Hosp—H.S at rate of £150 Also Final Year Student.

Doncaster Royal Infirmary—H.S., £175

Derby, Derbyshire Royal Infirmary—Cas. O and Orthopædic H.S., £150

Durham County and Sunderland Eye Infirmary—H.S £350

Ealing King Edward Memorial Hosp—Cas O and Deputy Res. M O at rate of £225

Eastbourne Princess Alice Hosp—Res. H.S £150

Eastbourne St. Mary's Hosp—Res H.S £150

Essex County Council—Jun. Asst. M O for Black Notley Sanatorium £350

Evelina Hosp for Sick Children Southwark S E—H S., at rate of £1 0

Exeter, Princess Elizabeth Orthopædic Hosp—Res H.S at rate of £150

Glasgow University—Lectureship in Human Embryology and Histology in Dept of Anatomy, £500–£600
Grimsby and District Hosp—Sen H S and H P at rate of £200 and £150 respectively
Hampstead General and N W London Hosp Haverstock hill N W—H P Also Cas O to Out patient Dept each at rate of £100
Harrogate and District General Hosp—Cas O and H S to Ear Nose, and Throat and Maternity Depts at rate of £150
Hertford County Hosp—H P at rate of £150
His Majesty s Colonial Medical Service—Vacancies for M O s £600–£700
Hosp for Epilepsy and Paralysis Maida Vale W—H P at rate of £100
Hull Beverley road Institution—Asst M O s, each £350
Hull Royal Infirmary—H S to Ophth and Ear Nose and Throat Dept at rate of £150
Ilford King George Hosp—H.S at rate of £100
Ipswich East Suffolk and Ipswich Hosp—Cas O at rate of £144
Ipswich Mental Hosp—Jun Asst M O £350
Kidderminster and District General Hosp—Jun H S, £100
Kincardine County—Deputy M O H, £600
Kingston upon Thames Royal Borough—M O H and School M O £950
Lancashire Biddulph Grange Orthopædic Hosp—Sen. H S, at rate of £250
Leicester City—Asst M O H s each £500
Leigh Infirmary Lancashire—Jun H S at rate of £150
Lincolnshire (Kesteven) County Council—Asst County M O H, £500
Liverpool Alder Hey Hosp for Children—Two Res Asst. M O 's, each £200
Liverpool Port Sanitary and Hospitals Committee.—Res Asst M O s, each £200
Liverpool Royal Babies' Hosp Woolton—Res M O at rate of £125
Liverpool Sanatorium Delamere Forest Frodsham—Jun Asst to Med Supt £225
London Chest Hosp Victoria Park E—H P at rate of £100
London County Council—Coroner for the County of London £1700 M O £99 Also Dental Anæsthetist £56 5s
London University—University Readership in Bacteriology at British Postgraduate Medical School, £800
Manchester Ancoats Hosp—Cas O, £250 H.S to Ear, Nose and Throat Dept and H P to Hon Phys at rate of £100 Also Asst Surg Officer to Orthopædic Dept, 10*s* 6*d* per attendance
Manchester Ear Hosp, Grosvenor square, All Saints—Res H S £120
Manchester Prestwich Mental Hosp—Locum Tenent M O 7 guineas per week
Manchester Royal Infirmary—Res Surg O £200
Market Drayton Cheshire Joint Sanatorium—Res H P, £250
Metropolitan Hosp, Kingsland road E—Cas O and Res Anæsthetist £100
National Hosp for Diseases of the Nervous System Queen square W C—Asst Physician Also H P, at rate of £100
National Temperance Hosp Hampstead road N W—Cas O at rate of £120
Newcastle upon Tyne, Royal Victoria Infirmary—Sen Accident Room H.S £150
Northampton County Borough Education Committee—Asst School Dentist £450
Nottingham City Isolation Hosp—Temp Res M O at rate of £350
Nottingham General Hosp—H S at rate of £150
Oldham Municipal Hosp—Res Surg Officer £500
Oswestry Robert Jones and Agnes Hunt Orthopædic Hosp—H S at rate of £200
Plymouth City General Hosp—Deputy Med Supt, £450
Plymouth Prince of Wales's Hosp Devonport—Jun H S, at rate of £120
Plymouth Prince of Wales s Hosp Greenbank road—H.P and H S each at rate of £120
Port of Spain City Council.—M O H, £800
Portsmouth City—Asst M O H and second Res Med Asst £500
Portsmouth Royal Hosp—H.P at rate of £130
Portsmouth Saint Mary's Hosp—Sen Res M O, £350
Preston, Sharoe Green Hosp—Jun Asst Res M O at rate of £100
Reading Royal Berkshire Hosp—Res Anæsthetist. Also Res Cas. O at rate of £250 and £150 respectively
Rochdale Infirmary and Dispensary—Sen H S £250
Rotherham Hosp—H.S for Ophth and Ear, Nose and Throat Depts £150
Royal Naval Dental Service—Eight Dental Officers
Royal Northern Hosp Holloway N—Clin Asst in Radio Therapeutic Dept
St Alban s and Mid Herts Hosp—Secretary £200
St Albans, Hill End Hosp for Mental and Nervous Disorders—Fourth Asst M O £350
St John s Hosp Lewisham S E—Res Cas O, at rate of £100
St Leonards-on Sea Buchanan Hosp—Jun H.S £125
St Mark's Hosp for Cancer &c City road E C—Clin Asst for Out patients Dept
Salford Hope Hosp—Asst Res M O at rate of £200
Salisbury General Infirmary—Res M O £250
Sheffield Children s Hosp—H.S £100
Sheffield Jessop Hosp for Women—Res M O at rate of £150
Sheffield Royal Infirmary—H S Aural H.S and H.S to Orthopædic &c Service each at rate of £80 Ophth H.S at rate of £120 Cas O at rate of £150
Shrewsbury Royal Salop Infirmary—Res H P at rate of £160
South Africa Victoria Hosp Lovedale—Med Supt and Chief M O Also two Asst M O s each £350 for men each £325 for women
South Shields General Hosp—H S at rate of £150
Stoke-on Trent Longton Hosp—H S £160
Surrey County Council—Jun. Asst M O for County Sanatorium Milford at rate of £350
Swansea General and Eye Hosp—H S at rate of £150 Also Locum H S to E N T and Ophth Depts at rate of £200
Taunton and Somerset Hosp—Sen R M O at rate of £200
Wakefield Clayton Hosp—Two H S s each £200
Weir Hosp Grove road Balham, S W—Jun Res M.O £150
Weston super Mare General Hosp—Res H P £150
Woking and District Victoria Hosp—Res M O at rate of £120
Wrexham and East Denbighshire War Memorial Hosp—Res H S, at rate of £150

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Newcastle Emlyn (Carmarthen)

Births, Marriages, and Deaths

BIRTHS

COOK—On July 10th at Bexley Hospital, Kent the wife of Dr Leslie C Cook, *of a son*

FORRESTER—On July 5th at Llanelly, the wife of Dr G Stuart Forrester of a daughter

HOGG—On July 9th at Devonshire place London the wife of Mr James C Hogg F.R C S, of a son

LEWIS—On July 7th, at Cambridge the wife of Dr Windsor Lewis *of a daughter*

LOVE—On July 6th at Highgate the wife of Mr R J McNeill Love F R C S of a daughter

MACLAY—On July 11th at Kensington square London, the wife of Dr the Hon Walter Maclay of a son

MARRIAGES

PROCTOR—HOCKEN—On July 6th at St Andrew's Church Plymouth, Surgeon Commander R L G Proctor, M B F R C P I R N elder son of Mrs Proctor and the late Rev R G Proctor B D of Dublin to Dorothy Joan, elder daughter of Engineer Rear Admiral and Mrs J H Hocken of Elburton, Devon

RENWICK—McISAAC—On July 6th at St Columba s Church Glasgow, John Renwick, M B Keighley, Yorks to Mary McIsaac of the Isle of Jura Argyle

SMYTH—FAIRCHILD—On July 6th in New York City Arthur J Smyth M B of Cambridge to Priscilla S Fairchild of Noroton Connecticut U.S A

DEATHS

UPTON—On July 10th, at 28 Medina Villas, Hove, Sussex Herbert Chrippes Upton M R C S Eng in his 93rd year.

WOODS—On Tuesday, July 6th, at Barton-on Sea Hants Herbert Hunter Woods M.R C S Eng D.P H aged 67

N.B—A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

BRITISH MEDICAL ASSOCIATION
WEDNESDAY *July 21st* THURSDAY and FRIDAY—Annual meeting in Belfast

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL Ducane road W
WEDNESDAY July 21st—3 P M clinical and pathological conference (surgical)
THURSDAY—3 P M. gynæcological endocrinology
FRIDAY—3 P M clinical and pathological conference (obstetrics and gynæcology)
Daily 10 A M to 4 P M medical clinics surgical clinics and operations obstetrical and gynæcological clinics and operations

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole street W
MONDAY July 19th, to SATURDAY July 24th—ALL SAINTS HOSPITAL Austral-street, West square S E afternoon and evening course in urology—HOSPITAL FOR DISEASES OF THE SKIN Blackfriars road S E afternoon course in dermatology—Open only to members of the fellowship

HOSPITAL FOR EPILEPSY AND PARALYSIS Maida Vale W
THURSDAY July 22nd—3 P M Dr Wilfred Harris Clinical Demonstration

GIFTS TO HOSPITALS—At the annual meeting of the Princess Margaret Rose Hospital at Edinburgh on July 9th it was announced that a donation of £8000 has been made by Lord Nuffield—The Sevenoaks and Holmesdale Hospital has been cleared of debt by a gift of £4000 from Mr E W Meyerstein

NOTES, COMMENTS AND ABSTRACTS

PSYCHOLOGY OF INTERNATIONAL RELATIONS

In an address at Friends House London on July 6th Prof Ernest M Ligon of Schenectady U.S.A said it was not always true that if nations knew all about one another they would like one another Hence the aim of those who worked for peace should be less understanding" than cordial relations

The basic concept in social psychology was the attitude the meaning which a person attached to a situation. The emotional element was more important than the intellectual and much of the error in international thinking was due to its neglect. An attitude might b specific (e g a dislike of people with red hair) or general (e g patriotism) Often the two conflicted; thus a man might have a strong sentiment against race prejudice yet find it distasteful to make intimate contacts with members of another race Some general attitudes were so closely related to human nature as to be almost universal—e g sympathy In international relations the universal attitudes could best be counted upon and in these knowledge (understanding) was more likely to lead to mutual attraction than in the other two groups On these attitudes depended men s ability to live together in harmony The relatively universal attitudes were nearly all favourable; in the others success or failure depended on education in the widest sense

In the relationship between any two nations three other and distinct groups of attitudes were involved. First came the attitudes which individuals of one nation held towards individuals of another The second group included those attitudes which the people of one nation held towards not the people of another nation, but the other nation itself These were usually part of their patriotism and included their attitude towards their own nation The third group included the attitudes which governments held towards each other these were often entirely separate from the attitudes held by the common people towards other nations More ruthless, selfish, and irrational attitudes had probably been held by governments than ever by peoples When all these attitudes were favourable between two nations, war was highly improbable When one of the groups was unfavourable, it was possible. Between two nations of different race, religion and social customs the attitudes of the two peoples toward one another were very important; between nations of the same race and religion the other two groups of attitudes counted more Governments usually tried to build such attitudes of patriotism that in time of conflict they would not have their people against them Governments would find it difficult to make war if the other two groups of attitudes were strongly favourable.

Turning to his particular subject—namely Anglo-American understanding—Prof Ligon said that both Great Britain and the United States had much national conceit and each thought of the other as second best. It might not be such a long step for each to put the other on a par and have an Anglo-American understanding which would constitute the most colossal example of self righteousness and bigotry in history! The central principle of bringing about better understanding was obviously to change undesirable attitudes for better ones Some unfavourable attitudes were purely the result of ignorance and many potentially favourable ones were neglected This fault could be corrected through education An attitude of some humility would be found if in every country it were considered important for every man who wished to be thoroughly educated to spend at least one year in another country—or at least to realise that no nation had everything of value within its own borders Better still would be a method of superseding faulty attitudes by good ones At present the principle that a country should seek its own interests was so completely accepted as right that a statesman who placed universal right above national right would probably not be elected to office So long as this attitude was basic in governments international strife would not end Logic-tight compartments in the mind should be broken down and the same ethics should be applied to political as to personal contacts If the British were as completely unselfish towards other nations as they were towards foreign visitors they would be the greatest exponents of international peace

Prof Ligon defined the basic Christian attitudes as sensitivity to the needs of others and determination to give every man his chance of happiness and success to resolve the conflicts within and between men and to serve men whether they wanted to be served or not. To apply these principles to international relations was no simple matter and he wished that a Christian court of international justice could be set up to report on current problems from a Christian point of view By such methods genuine international attitudes might be created and bring about genuine international understanding

THE PIONEER HEALTH CENTRE

THE enthusiasm that characterises all the gatherings at the Pioneer Health Centre in Peckham prevailed at the annual meeting on July 12th. In introducing the speakers, Lady Maureen Stanley welcomed the centre as the beginning of a new movement which, it is hoped may spread throughout England and possibly the Empire in teaching the family how to be healthy Lord Nuffield the president and a generous benefactor expressed the hope that the Government would establish similar centres in every big town throughout the country England is prosperous to-day he said but give a man a job and a health centre of this nature and England will be greater than ever before

The value of the centre for experimental research was described by Dr Scott Williamson, its founder with Dr Innes Pearse He spoke of it as a field for scientific inquiry The first object has been to make a survey which has already revealed what he described as a truly alarming state of affairs" In only 8 per cent. of the 1000 examined could be found no diagnosable disease Through the cordial coöperation of the members in carrying out the advice given to them the improvement in the condition of a large proportion had been staggering After the survey the Centre became a great laboratory of experimental research Its value as a place for research in applied social services was emphasised by Prof Julian Huxley who said that it was providing new ideas about the real nature of health by substituting for a positive a negative conception In particular he drew attention to the distinction that is being drawn between disease and disorders as will appear from the scientific report now in preparation Prof Huxley found an analogy between health and economics in that both are concerned with a problem of distribution Knowledge is now being lavishly bestowed upon people who are ill but the Centre marks an advance in preventive medicine towards the study of health with the family as the social unit. He claimed accordingly that the Centre deserves a share of the financial support given in other and less profitable directions It was hoped that the Centre would become self-supporting in three years but care in maintaining the scientific aim which has made necessary 10 000 appointments in little more than eighteen months has retarded the enrolment of additional families necessary to complete the complement to secure financial stability, for there can never be less than 9 examinations involved in the overhaul of a family of 4 persons

Not the least remarkable feature of the work of the Centre is the way in which it brings together many sections of the community and does so by such original means as the selection of 10 P M for the hour of meeting

A NEW IRISH JOURNAL

WE have received the first number, dated July, 1937 of the *Journal* of the Irish Free State Medical Union An editorial introduction recalls the chief object of the Union (I.M.A and B M.A) which is to promote the medical and allied services, and to maintain the honour and interests of the medical profession The journal is to be a medium for free expression of opinions by members of the Union and in the main a medico-political publication. The editor is Dr R J Rowlette, who is assisted by Dr J C Flood

NEW PREPARATIONS

P A.B S is the name given by Messrs C J Hewlett and Son Ltd , to their preparation of *p*-aminobenzene-sulphonamide, now generally known as sulphanilamide. As conditions that may suitably be treated with this drug they mention puerperal sepsis erysipelas, scarlet fever, streptococcal inflammation of the throat and tonsils, meningitis, and streptococcal arthritis, and its use as a prophylactic against hæmolytic streptococcal infections is suggested P A.B S is supplied in tablets of 7½ grains (0 5 gramme) each, and may be had from the manufacturers at 35, Charlotte-street, London, E C 2

PERCALCIN —Made at Evans' Biological Institute by Evans Sons Lescher and Webb, Ltd (Liverpool and London), Percalcin is described as a highly concentrated solution of calcium in organic combination for intravenous or intramuscular injection The manufacturers state that each 5 c cm of Percalcin solution contains the equivalent of 0 2 gramme of calcium hydroxide , from which they conclude that the preparation contains 2½ times as much calcium as a 10 per cent solution of calcium gluconate They also claim that it is more stable than the gluconate and that it causes no pain or irritation on injection

ANTOSTAB is prepared from the serum of pregnant mares and is put forward as a means of stimulating the gonads male or female It is regarded as an anterior pituitary hormone—to be distinguished from anterior-pituitary-like " substances obtained from pregnancy urine—and its effect on the ovary is to stimulate ovulation and the secretion of œstrin Its follicle maturing activity, in all the species of animals examined is said to have been greater than that of any other known hormone One mouse-unit of Antostab is defined as the amount that will double the weight of the ovary of a 3–4 weeks' old infantile female mouse in 3–4 days The preparation is sold in ampoules as a sterile dry powder, with ampoules containing a suitable solvent, and courses of six intramuscular injections of 100 m u are reported to have given good results in severe cases of menstrual disorder associated with ovarian or anterior pituitary disorder Particulars may be had from Boots Pure Drug Co Ltd (Wholesale and Export Dept), Station-street, Nottingham

A FILM ABOUT ELASTOPLAST —The value of the occlusive dressing is now well established and elastic plaster is convenient for this as for other purposes To illustrate the various uses of their Elastoplast Messrs T J Smith and Nephew (Neptune-street, Hull) have prepared a film which they offer for exhibition to medical audiences It deals with varicose affections minor and major injuries post-operative dressings skin diseases sprains and joint injuries and foot deformities

NAPOLEON AGAIN

SOME might think it rash to add to the already vast bibliography of Napoleon, but General Brice,[1] being both doctor and soldier, is doubly qualified for the task. Napoleon is supposed to have believed that his destiny was guided by a star and in the first part of the book his career is surveyed as though it were the course of a star from its dawn, through ascent, zenith, and decline, to its final extinction. Part II deals with the personality and mortal body and Part III with the external influences which helped to mould Napoleon , this will be, perhaps, more interesting to the medical reader The author, rejecting the traditional diagnosis of carcinoma of stomach as the cause of death of his hero, adduces alternative, if not altogether convincing, evidence of amœbic abscess of the liver following dysentery contracted at St Helena Doctors will not be surprised to learn that the desire to dominate, which was the constant spur to Napoleon's ambition, is attributed to a sense of inferiority from childhood , in this at least Napoleon was no more and no less a riddle than any other member of the human race Although his origin was partly Italian, it was the Corsican strain which prevailed and largely accounted for his mysticism and half-belief in superstition General Brice, who writes with sympathy for and admiration of his subject, is no blind hero worshipper In his anxiety to substantiate his statements he quotes rather too freely from authorities, but this is a fault on the right side Even those who prefer to think of the great servants of France in terms rather of Louis Pasteur than of Napoleon Buonaparte should not neglect this book, for though the dictator mind may be unpopular in this country, men of this type are always interesting Mr Basil Crighton is to be congratulated on an admirable translation.

PHYSICAL EDUCATION FOR BOYS

A DESCRIPTION of the aims and difficulties of schoolmasters who are actively assisting physical education is of particular interest to doctors as parents, school doctors, or just professionals in health matters In a series of essays [2] ten men of widely different teaching experience give their views on this prickly subject Some of the authors have carried out what they advocate, some have had little opportunity to do so and still others, being headmasters, have been in a position to create such opportunity in their schools The book is concerned, however, less with existing conditions than with possibilities The authors would like to see in every school departments of physical education with control over all physical activities with a director on a par with the rest of the staff and available for discussion of difficulties The needs of all the children should be catered for, they say, and not just the teams , the director through his daily contact with the children should act as an auxiliary medical eye keeping watch for minor physical defects and nervous disturbances The belief that the subject is about to come into its own is shown by four references to Cinderella, whose name is as overworked as was the family drudge who has become the classical symbol for neglect

THE MEDICAL DIRECTORY

Messrs J and A CHURCHILL LTD write " To maintain the accuracy of our annual volume we rely upon the return of our schedule which has been posted to each member of the medical profession Should the schedule have been lost or mislaid we will gladly forward a duplicate upon request The full names of the doctor should be sent for identification ' Messrs Churchill's address is 104, Gloucester place, London, W 1

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[1] The Riddle of Napoleon By Raoul Brice Surgeon Lieutenant General French Army London G P Putnam Sons 1937 Pp 345 15s

[2] Physical Education for Boys Edited by G W Hedley and G W Murray London Methuen and Co Pp 119 3s 6d

ADDRESSES AND ORIGINAL ARTICLES

SOME THOUGHTS ON MEDICAL EDUCATION *

By R. J Johnstone B.A MB FRCS FCOG

PROFESSOR OF GYNAECOLOGY QUEEN'S UNIVERSITY BELFAST
GYNAECOLOGIST TO THE ROYAL VICTORIA HOSPITAL

The presidency of such an association as this is no mean honour and it is an honour enhanced by the distinction of those who have held the office before me It is my pious duty to commemorate the presidents at your two previous meetings in Belfast Both of them were my teachers and of one I was for many years a colleague.

JAMES CUMING

When the association first met here in 1884 Prof. James Cuming was president He was a physician of a type perhaps more common in those days than in these a type which owed to the humanities and to medicine at least an equal allegiance As an undergraduate one felt that a knowledge of Horace was possibly a better passport to his good graces than an acquaintance even with Fagge and Pye-Smith. His wide knowledge both of men and of medicine his fundamental common sense and not least his commanding presence made him a court of appeal as a consultant and his judgments were delivered in measured phrase in logical sequence, not seldom with ironic humour In therapeutics he was not merely a sceptic—I speak now of his later years—he was an iconoclast There is a story probably apocryphal that after a consultation he discussed at great length the diagnosis with the patient s doctor who finally grew restive and said, But what treatment am I to give him? Cuming lifted a Burroughs Wellcome price list from his desk handed it gravely to the inquirer and said in his most impressive tones Begin at A and work through that.

WILLIAM WHITLA

In 1909 Sir William Whitla sat in the president s chair also a physician but with a difference One evening he described to me at some length how he had almost persuaded the reader of his publishing firm that the split infinitive as he used it was an enhancement of English. In his own subject of materia medica and therapeutics he was a recognised authority But his chief claim on the gratitude of his fellows was that he was the pioneer in a path of medical literature on which he has since had many followers. His Dictionary of Treatment came as a boon to many a harassed practitioner who had reached the end of his therapeutic resources It was an immediate success and retained its popularity through successive editions It gained the distinction of translation into more than one foreign language and one of Whitla s cherished possessions was a beautifully bound version in Chinese.

To his own profession Whitla was most generous Besides his private kindnesses to his brethren in need he built and presented to the Ulster Medical Society as its permanent home the (Whitla) Medical Institute At its opening he told us that he had built it out of the profits on his Dictionary His benefactions did not end with his life He had been one of those who in the face of much opposition advocated the establishment of Queen s University He had served it as professor as senator as pro chancellor and as member of the Imperial Parliament When he died he left to the University his house and grounds as a residence for the vice-chancellor together with a large share of his considerable fortune The money has been earmarked for building and when the association next visits Belfast my successor will deliver his address in the Whitla Hall of the University

The Medical Curriculum

I have chosen to address you on medical education partly because I am much interested in it myself as a teacher of graduate and undergraduate students of medicine ever since I got my qualification partly because, if one may judge by the numerous criticisms of our present system of education I have read my interest is shared by many others, and lastly because medical education should be a matter of vital interest to every practitioner Our profession cannot afford to recruit at a C3 standard. In this health conscious age of ours public authorities are constantly launching one health scheme after another As experts we ask for our collective advice to be taken and for our collective services to be employed But the administrator has the last word and while the specialist or the whole-time officer is practically immune from criticism the incompetence or the carelessness of a few can be alleged as a reason for excluding the whole class of general practitioners from participation in a service We are asking for our rights but rights involve responsibilities and if we are to enjoy the one we must be prepared to the last man to discharge the other

The critic of the medical curriculum assumes generally that we teachers at the end of five years should turn out a finished product and goes on to blame us because we do not turn out a finished general practitioner No one expects us to turn out at the end of the five years a finished surgeon or anatomist or pathologist Everyone recognises that to form a specialist years of post-graduate study and experience are required. Are we to take it that the path which the general practitioner must follow to reach the mastery of his art is shorter and less steep than that trodden by the specialist? I should say no The specialist must know almost everything about his subject, the general practitioner must know something about almost every subject He must learn to make his diagnoses without the skilled help which the specialist commands, and to carry out his treatment with makeshift appliances and with amateur nursing He must acquire sufficient diplomacy to deal with unreasonable patients with suspicious relatives with inquisitive neighbours He must keep in touch with the demands of public authorities and of public services His responsibilities are if anything greater than those of the specialist for he is the court of first instance and on his decision the life of a patient may depend His word may put a man in the dock or may even send him to the gallows

Just as the finished surgeon must have had responsible experience of surgery the finished general practitioner must have had responsible experience of general practice The undergraduate s horizon is limited by the threatening figures of a court of examiners.

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* Presidential address to the British Medical Association at Belfast on July 20th 1937

Only when that grim spectre has faded is he free to take a view of the responsibilities which he must shoulder throughout the rest of his professional life, responsibility to his patients, to his own reputation, and most important of all to his own private conscience The better trained the young graduate, the more quickly and the more competently does he take up the burden

I may very pertinently be asked how, if practice is essential to form a good practitioner, can licensing bodies be justified in giving a licence to practise to those who have not had this experience I can only reply that after many years as an examiner and as an inspector of final examinations I am satisfied that the dominant question in the mind of every examiner is, "Is it safe to the public to allow this candidate to practise ?" and that only when that question can be answered in the affirmative is he permitted to pass

The Background to Clinical Study

As the practice of clinical medicine is the most important factor in forming the young practitioner and is to be his chief pursuit in after life it is but natural that would be reformers of the curriculum should demand that yet more clinical study should find a place in the education of the undergraduate I should be the last to disagree, but do not let us be led into the fallacy of thinking that clinical training is the be all and end all of medical education.

A probationer nurse and a medical student have each approximately three years of clinical experience The nurse's opportunities for clinical observation are infinitely better than those of the student She probably sees at least as many patients, and she does not merely see them during a ward visit She lives with them hour after hour and day after day, watches the course of their disease, notes its changing phases, and the effect of the methods of treatment that have been employed She assists at consultations, and has the benefit of listening to clinical lectures And she makes full use of her opportunities Every one of us must acknowledge with gratitude the debt that we owe to the trained nurse for her help in diagnosis, in prognosis, and in treatment But does her unrivalled clinical experience qualify her to take on the function of a medical practitioner ? She would herself be the first to say no She lacks the background, the background of human anatomy and physiology and pathology, of knowledge of the human body in health and in disease, which the medical student has gained with much toil and sweat and against which his clinical observations are composed and the picture interpreted. It is the main business of a medical education to provide an adequate background and to teach how it should be used, and the more competently that work has been done the more valuable will his clinical experience be to the practitioner

I have put human anatomy in the first place as a necessary preliminary to clinical study Teachers of anatomy are usually the most popular of professors among medical students so it is only poetic justice that their teaching should be a favourite point for attack by the critics And perhaps the commonest criticism is that such an unconscionable time is wasted by the student in the dissecting room

Is his time really wasted ? The successful clinician takes little upon trust, and so far as is possible checks all his facts by his own personal observations But in almost all the sciences which the medical student must study he is compelled to take most of his facts on trust Practical classes permit him to verify a few of them, but he has neither the time nor the technical skill to go further When he takes up practical anatomy he is not merely permitted and encouraged, he is required by his own personal observation to verify the statements of his teacher and of his text-book. This is an invaluable discipline, even if a knowledge of anatomy were of little use in practice But anatomy is the large scale map of the human body, and we have it on the authority of one who was both a scientist and a statesman that if we wish to get an understanding of peoples and of events it is essential to study large scale maps

If the anatomist is Public Enemy No 1 of the medical student, No 2 is undoubtedly in the eyes of the critics the lecturer We who lecture might conjugate the verb something like this "We are dull, you are falling asleep, they think we should be painlessly exterminated." The pity of it is that the critics are to some extent in the right There are dreary lectures and dull lecturers, and that is a pity, for after one has listened to a master of the art one is left in no doubt as to the superiority of the spoken word above the printed page in arousing interest in a subject and in presenting it in the round.

Teaching and lecturing are arts that can be learned and nowadays a training in them forms part of the preparation of all primary and of many secondary school teachers Would it not be possible that an institution such as the British Postgraduate Medical School should give a course in lecturing, and that those who have designs on the teaching posts in our medical schools should be encouraged to take it out ?

The Neophyte

I do not propose to night to take up your time with further discussion in detail of the medical curriculum and of its critics Doubtless it could be improved, but so far as I have been able to find out, our medical students get a training certainly not inferior to that given in any other civilised country Of course the curriculum is overcrowded, but fortunately the brain of the undergraduate is elastic and has a well developed protective mechanism of forgetfulness, not likely to atrophy through disuse

However much or little the young graduate has retained of the many sciences he has become acquainted with, he has had a training in observation, in the use of his critical and of his reasoning faculties, and in dealing with men, women, and examiners He has the key to the vast storehouse of knowledge contained in medical literature, for he is familiar with its idiom He now enters on the most important stage of his lifelong medical education He now becomes his own teacher and taskmaster He has had to learn to think like other people, he must now think for himself Only thus can he transmute the ore of scientific knowledge into the gold of clinical wisdom

In all but a few instances the neophyte begins his career under the tutelage of one of his seniors, either a member of a hospital staff or a general practitioner, and that senior has a great responsibility, for by precept and still more by example he may make or mar a promising practitioner Both in this stage and later, when he has at last hoisted his own flag, the young physician need not want for aids in self education Nothing is more helpful then a circle of medical friends who are not ashamed to talk shop Of much the same kind of value is the consultant who is willing to discuss cases at length Lectures in a class-room may be indigestible fare for the undergraduate delivered in a medical society they seldom fail to provide food for thought for the graduate student. His journals may be relied on to add to and to correct his store of knowledge

We have long had the post graduate course for the few but the National Health Insurance Act has now made it available for the many If I might be permitted to criticise I think that most post-graduate courses try to administer to their medical patients what used to be called a blunderbuss prescription and that too much is attempted in too short a time. But these courses are still in their infancy Some day we may see the general practitioner going back to his old school or to another school for a month for three months, even for a sabbatical year both to learn and to teach. And he will come back to his patients as he does from our present courses not merely with his skill enhanced but, what is perhaps more important, with his interests freshened and his enthusiasm rekindled

There are possibilities of post-graduate training in the linking up of practitioners with hospitals, as Sir Farquhar Buzzard suggested last year Leaving aside the difficult question of interference by one practitioner with the patients of another there are many administrative problems to be overcome. With goodwill on both sides these should not be insoluble but it will I am afraid be a long time before administrators can be brought to believe that a panel of doctors is just as efficient and reliable and gives no more trouble than a whole-time officer

The General Practitioner

Perhaps in the future all difficulties will be solved by the establishment of a State medical service Like good democrats we shall always oppose it But every fresh instalment of social and of public health legislation every new chapter opened in the volume of State control brings us steadily nearer to the totalitarian ideal and when that has finally arrived I suppose we may say good bye to the general practitioner as we know him

But he is still with us and I ask myself how does he compare with his predecessor of a generation back. His equipment is undoubtedly better he has for the service of his patients a store of knowledge and an acquaintance with technical resources not even dreamt of when I was a medical student But I take down a volume written more than forty years ago by one who had been a patient of many doctors, and when I read his judgment on our profession I realise that in the eyes of the patient a critic who must not be lost sight of qualities are at least as important as technical accomplishments. Let me quote a part of that judgment to you

> "There are men and classes of men that stand above the common herd; the physician almost as a rule Generosity he has such as is possible to those who practise an art never to those who drive a trade discretion tested by a hundred secrets; tact tried in a thousand embarrassments and what are more important Heraclean cheerfulness and courage So it is that he brings air and cheer into the sick room, and often enough, though not as often as he wishes brings healing

One is proud to belong to the profession which merited such a tribute from Stevenson for he was anything but a fool but how little he says of the skill and of the training on which we set such store and how much of virtues and of qualities unmentioned in any curriculum and which no teacher whom I have ever met would undertake to impart. Does our scheme of education do nothing to foster them?

Medical practice and medical education has its repellent side often sordid and sometimes disgusting I do not think that many youngsters take up the drudgery of medicine unless they have as part at least of their motive a lively interest in humanity and some sympathy with human suffering A hospital is the best of soils to foster such good qualities and to encourage them to develop into the most admirable of medical virtues Close contact with men and women the constant witness of their fortitude their patience their unselfishness in the face of pain of disability of death itself is a more impressive lesson than the skeleton at the Egyptian feast, and only the most careless or the most callous can fail to benefit by it Attendance in the wards and in the out-patient rooms still more a residence in hospital long a feature in Irish medical schools and soon to be introduced in the United Kingdom generally is an education in behaviour no less than in clinical medicine. It is the better school for that, as patients in British hospitals are treated as men and women with feelings which can be hurt and a personal dignity which can be outraged.

About our students I have no anxieties. Their standard is as high as it ever was and they are getting and taking an excellent training To the seniors, of whom I am one, the two-edged compliment may be paid that it is impossible to improve us But I do feel uneasy about the most important class in the profession the young general practitioner in the twenties and the early thirties. Is panel practice giving him an assured income too soon? Is it taking away the incentive to study and to improve the standard of his practice? Is he sitting down at ease in Zion? I trust not, for it is upon him that we depend to maintain and to raise the prestige of our profession.

VITAMIN C AND INFECTION

EXCRETION OF VITAMIN C IN OSTEOMYELITIS

By M. A. Abbasy M.B Cairo

AND

Leslie J Harris Sc.D D.Sc

OF THE NUTRITIONAL LABORATORY CAMBRIDGE MEDICAL RESEARCH COUNCIL, AND UNIVERSITY OF CAMBRIDGE AND

N Gray Hill, M C, M.B Lond. D.P H.

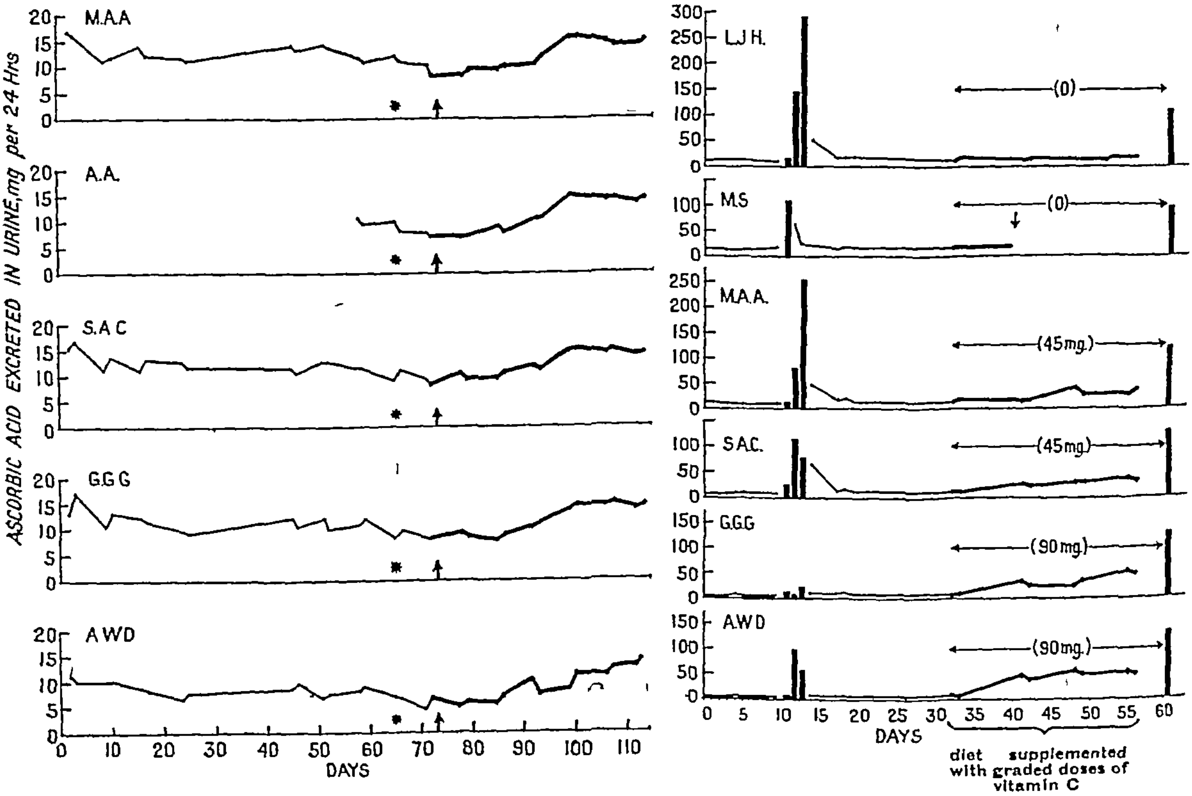
DEPUTY MEDICAL SUPERINTENDENT QUEEN MARY'S HOSPITAL FOR CHILDREN CARSHALTON SURREY

In earlier work by Abbasy and Harris a brief summary of which only has previously appeared (see Abbasy Harris, Ray and Marrack 1935) a quantitative study was made of the relation between the intake of vitamin C and its excretion in the urine. The general finding was reached that the rate of excretion of the vitamin as soon as a state of equilibrium had been attained on a given diet was closely proportional to the amount of the vitamin present in the diet little variation being seen between various individuals in a group receiving the same treatment With moderate intakes of vitamin C say 20–80 mg per day the amount estimated to be excreted at equilibrium was of the order of 50 per cent. of the intake As the detailed protocols of these results have not been published, it will be helpful for a better understanding of the present work to give here a graphical synopsis of some of the general conclusions (see Figs 1a, 1b, and 2)

During the progress of the work referred to it so happened that several of the subjects under examination developed attacks of influenza or feverish colds or other infections, and it was observed (see Abbasy, Harris, Ray, and Marrack 1935) that the onset of such an illness was marked by a sudden drop in the daily excretion of the vitamin Examples are shown in Figs 3a to 3c This finding, which seemed in confirmation of some observations recorded independently by Schroeder (1935) and Harde, Rothstein, and Ratish (1935) (see below), led us to undertake a more systematic study of the excretion of vitamin C in various infectious diseases In a recently published paper (Abbasy, Gray Hill, and Harris 1936) results were given for a series of 193 patients suffering from juvenile rheumatism, and for 88 cases of surgical tuberculosis, and it was shown that the infected patients had a marked deficit in the amount of vitamin C excreted in their urine as compared with 64 control subjects receiving the same dietary intake of the vitamin The infected subjects likewise gave a consistently diminished response to test doses of the vitamin. We mentioned that a lowered excretion of vitamin C had been observed so far in virtually all the infective conditions studied In the present paper, and the one following, similar results are now given of surveys of the vitamin C excretion under controlled conditions of large groups of patients suffering from certain other infective conditions

Our findings seem in general conformity with the conclusions of a number of recent authors who have also noted low rates of excretion of vitamin C in infectious diseases, so far as we know however most of these studies differ from our own in one respect, that they relate to scattered individual cases of various infections while we have been concerned rather with a more systematic survey upon large numbers of patients suffering from a single given infectious disease, accompanied always by groups of "normal" control subjects kept for comparison under identical dietary conditions

A survey of the literature shows that Schroeder (1935) found a low rate of excretion of vitamin C in a number of single cases of various infective diseases, as well as in cancer and diabetes, and Harde, Rothstein, and Ratish (1935) in ten cases of pneumonia (see also Bullowa, Rothstein, Ratish, and Harde 1936) More recently Hasselbach (1936a, b) and Heise and Martin (1936) have described low urinary excretions in patients with tuberculosis It has been questioned whether Addison's disease causes a fall in the vitamin C output (Wilkinson and Ashford 1936,



FIGS 1a and 1b —Slow rise in the amount of vitamin C excreted in urine after the dietary intake has been increased to a given fixed daily dose The final level of excretion when equilibrium is attained is graded according to the amount of the intake

FIG 1a (left) —Five subjects first on a diet low in vitamin C placed at asterisk on a vitamin C free diet and then at arrow on the same vitamin C free diet supplemented with the minimum daily dose of ascorbic acid (25 mg per day) After about 30 days all the subjects are excreting at the steady rate of 13 0–14 5 mg per day

FIG 1b (right) —Pairs of subjects given varying daily doses of ascorbic acid (0 mg 45 mg and 90 mg) in addition to a diet low in vitamin C The resulting excretions (thick curve to right of Figure) reach levels proportional to their intakes (The dark columns show responses to test doses before and after the experiment, which had been so arranged that the subjects who showed the larger responses at the beginning gave the smaller responses at the end and vice versa At the arrow one subject took large quantities of fresh fruit)

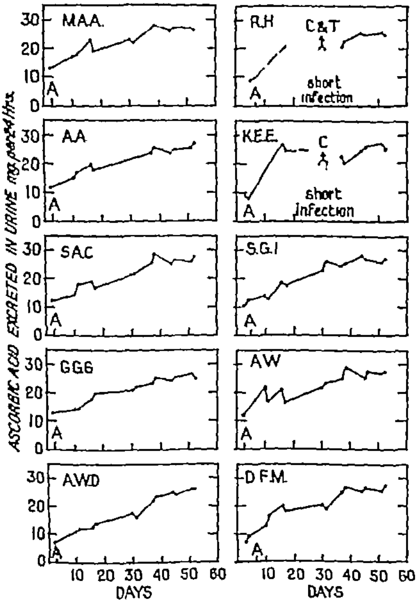


FIG. 3a.—This Figure with Figs 3b and 3c, shows diminution in excretion of vitamin C caused by onset of fever or toxæmia The ten subjects were given a normal diet supplemented with an additional 40 mg per day of ascorbic acid until a steady rate of excretion had been reached. The break in two of the curves shows the influence of infection Subjects R.H and K.E.E. had short lived common colds (with and without raised temperature respectively)

Witts 1936) (For possible influence of certain mental disorders see Bersot 1936)

Technique—The method of collecting and titrating the urine (with 2 6-dichlorophenolindophenol) was the same as previously described (Abbasy Gray Hill and Harris 1936)

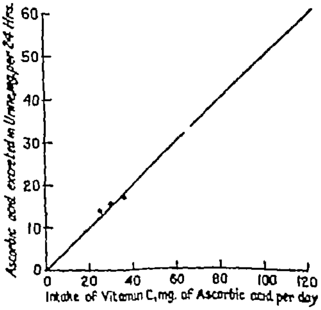


FIG. 2.—Summary of numerous experiments similar to those illustrated in Figs. 1a and 1b showing how the daily excretion of vitamin C is related to the past daily intake after equilibrium has been reached on any given diet.

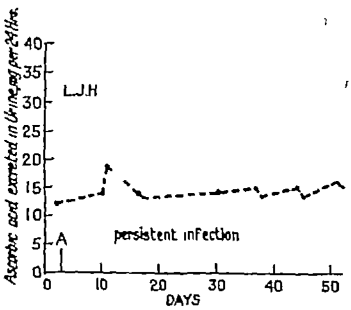


FIG. 3b —Subject L.J.H who took part in the same test, had persistent complex respiratory infections which caused a continued low excretion of the vitamin for many weeks.

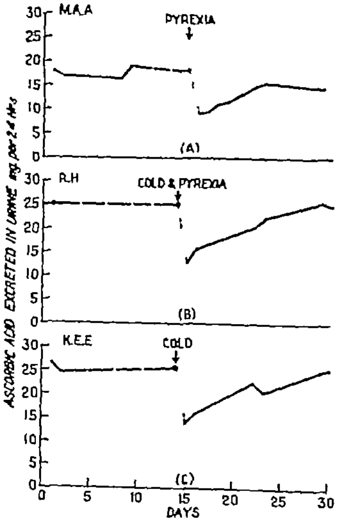


FIG 3c.—More detailed chart showing effect of onset of short colds or coryzal fevers in three subjects.

Diets—The dietaries were the same as set out in the paper dealing with acute rheumatism and surgical tuberculosis (Abbasy Gray Hill, and Harris 1936) Some of the patients in the group described as active osteomyelitis (see below) received an additional amount of vitamin C in their diet in the form of fresh fruit drinks.

Subjects examined—All the individuals examined were patients at Queen Mary's Hospital for Children Carshalton. Groups of 17 active cases of osteomyelitis 17 "half healed cases, 16 healed cases and 10 controls were investigated. The active cases were defined as having been recently operated on and as having profuse discharges from one sinus or more The healed cases were free from discharges and sinuses were healed and covered with healthy skin The "half healed" cases were intermediate in severity The controls were non infective conditions, mostly of congenital deformity All subjects had been on the standardised diet for some weeks before test

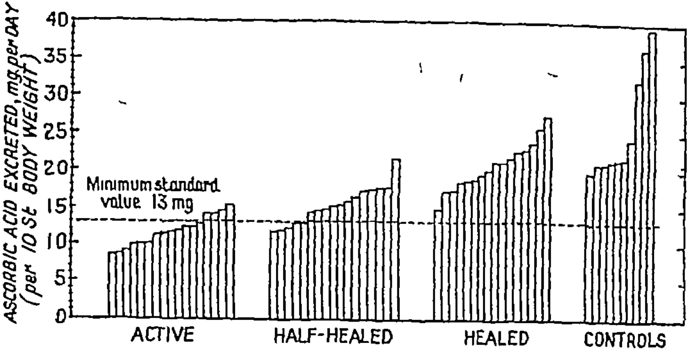


FIG 4 —Decreased excretion of vitamin C in osteomyelitis The heights o the columns represent the daily excretions of vitamin C on controlled di by 17 active cases of osteomyelitis 17 half healed' cases 16 'healed' cases and 10 controls The broken horizontal line represents the minimu standard level of excretion 13 mg per day

Results —The findings are summarised in Figs 4 and 5 It will be seen (Fig 4) that the range of values for the excretions of vitamin C by the "active" cases is only about one half of that of the control cases—viz, 9–15 mg per day as compared with 20–40 mg per day (all values are reduced *to a basis of 10 st* of body weight, and are the averages of at least three days' determinations) Whereas the controls are all well above the minimum standard level of excretion (their average being 26 mg per day), 76 per cent of the active cases are below standard (their average is only 11 6 mg per day) "Healed" cases are normal in their range of excretions, and "half healed" are intermediate

Similar conclusions are to be drawn from the effects of test doses (administered at the standard level of 700 mg per 10 st of body weight) While the controls and the "healed" cases reacted well on the first day, the "active" cases did not react until the second or third day (Fig 5)

A further study of the more detailed protocols (not shown) makes it clear that, within each group of cases, the degree of subnormality in the vitamin C titre goes roughly parallel with the severity of the infection, and, correspondingly, the better healed cases show a more adequate output of vitamin C than those in the earlier stages of healing

Conclusions —We may conclude from these results that osteomyelitis, like the other infective conditions we have examined, causes a marked diminution in the vitamin C "reserves" or "degree of saturation" The patient when healed returns to normal in his usage of vitamin C, and there is no evidence of a condition of latent infection as seen for example in acute rheumatism (Abbasy, Gray Hill, and Harris 1936)

A fuller discussion of the significance of the lowered excretion of vitamin C in infection is deferred to a later review, but in the meantime some further allusion to the matter is made in the paper that follows (Abbasy, Harris, and Ellman 1937)

SUMMARY

In common with other infective conditions, osteomyelitis causes a diminished rate of excretion of vitamin C in the urine and a lowered response to test dose, indicative of an apparently increased usage of the vitamin during the infective process "Half healed" cases were intermediate, and "healed" cases were normal (in contrast with cases of convalescent acute rheumatism which remained subnormal, so giving evidence of a latent infective process)

We are indebted to Sir Frederick Menzies and to Dr Gordon Pugh, late medical superintendent at Queen Mary's Hospital for Children, for kindly giving us access to the clinical material, to the medical staff for their coöperation, to Miss Mary Allen for clerical assistance, to Messrs Roche Products for supplying the ascorbic acid and to the Egyptian Government for generous financial support for one of us (M A A)

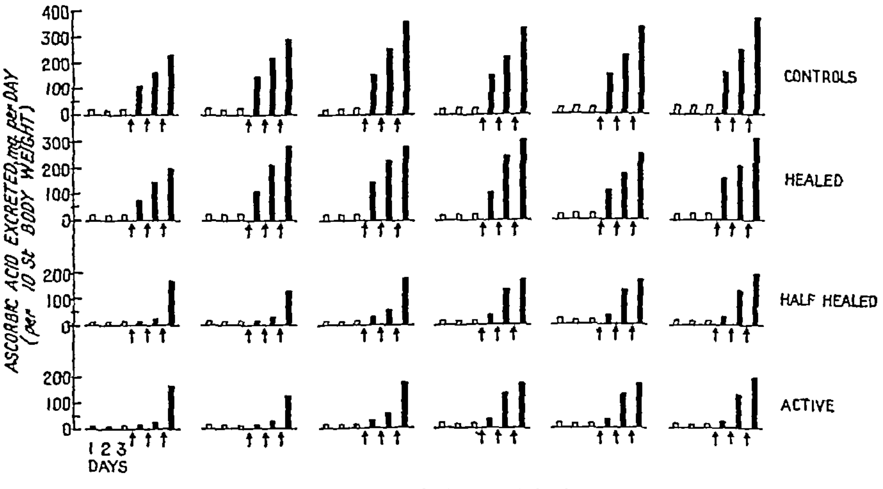


FIG 5 —Diminished response to test doses of vitamin C in 6 cases of active osteomyelitis as compared with 6 healed cases or 6 controls Half healed cases are intermediate Test doses were given on three consecutive days at the points indicated by the arrows and the dark columns show the sizes of the responses

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VITAMIN C AND INFECTION

EXCRETION OF VITAMIN C IN PULMONARY TUBERCULOSIS AND IN RHEUMATOID ARTHRITIS

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AND

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In continuation of earlier results dealing with the excretion of vitamin C and the response to test doses in certain infective diseases—including juvenile rheumatism surgical tuberculosis and osteomyelitis (Abbasy, Harris, Ray and Marrack 1935 Abbasy Gray Hill, and Harris 1936 Abbasy Harris and Gray Hill 1937)—further tests have been made of patients suffering from (1) pulmonary tuberculosis and (2) rheumatoid arthritis.

The technique of the urine analysis was as described in the preceding paper to which reference should be made also for a fuller bibliography Since the publication of our earlier results and while the present work was still in progress Hasselbach (1936) and Heise and Martin (1936) have also recorded low values for vitamin C excretion in tuberculosis

The cases of rheumatoid arthritis were examined in the rheumatic unit at St Stephen's Hospital and of pulmonary tuberculosis both at Hart's Sanatorium Woodford Green Essex and St Stephen's Hospital

PULMONARY TUBERCULOSIS

Dietary conditions were first standardised by placing all subjects for upwards of four weeks before the test on a diet which was supplemented with the juice of one orange daily (this supplement contains about 35 mg of ascorbic acid) As previous tests have shown, this amount is sufficient to bring normal subjects to a level of excretion somewhat above the minimum standard level of 13 mg. per day (Abbasy / Harris, Ray and Marrack 1935), and the period of four weeks is adequate to allow of equilibrium being attained (see Abbasy Harris and Gray Hi[ll] 1937)

The groups of patients examined consisted of active cases of pulmonary tuberculosis 13 ca[ses] of moderate severity and 6 quiescent c[ases] together with a group of 8 controls (mostly cas[es of] fractures partly or nearly fully healed) (T[he] controls were shared in common with the experim[ents] on rheumatoid arthritis (see below)) The classific[ation] into active moderate or quiescent was given by one of us (P E) as physician in charg[e of] the cases.

Results—The daily excretion of vitamin C by the patients (average of three days estimations) are arrayed in Fig 1 It will be seen that the active cases excrete no more than 5–13 mg. per day (average 7 6) as compared with 18–28 mg. per day (average 23) excreted by the quiescent cases (all values are reduced to a basis of 10 st. body weight) The quiescent cases are all well above the standard minimum value and the active cases all markedly below (with the exception of one case near the minimum level) The moderate cases fall into an intermediate position. The controls (shown separately in Fig. 3) are all above the minimum standard.

Correlation with sedimentation-rate.—These results indicate that the deficit in the urinary excretion in pulmonary tuberculosis goes parallel with the degree of severity of the tuberculous infection. A further indication of this correlation is furnished by the figures for blood sedimentation rates (Fig 1): it will be noticed that on the whole, as the sedimentation rate falls towards normal the urinary excretion rises *

Effect of test doses—Further confirmatory evidence of the low state of saturation of the patients with pulmonary tuberculosis is afforded by the results of experiments with test doses (Fig 2) While the active cases showed little response even on the third day, the quiescent cases showed a good response on the first day The "moderate" cases were intermediate giving a good response on the third day

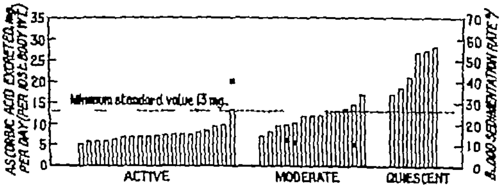

FIG 1.—Daily excretion of vitamin C by 10 cases of active pulmonary tuberculosis, 13 moderate cases and 6 quiescent cases. Quiescent cases are above the standard and active cases well below standard while moderate cases are intermediate. For controls see Fig 3.

High blood sedimentation rates (black squares) go with low urinary excretion and severe infection

RHEUMATOID ARTHRITIS

Following the procedure for tuberculosis, all patients were first kept for four weeks or more on a diet supplemented with the juice [of o]ne orange daily (=about 35 mg. of ascorb[ic acid) that] is to say less[than] was found to be a [n]ecessary pre[mi]se for any given[ ]hat a [...]ould of it is needed in the bo[dy] [...] of it overflows into the urine [...]ted patients appear to be in [...] saturation with respect [...]imental results and more [...]bbasy Gray Hill, and [...] and Gray Hill 1937 [...]37) These findings [...]ether in infections [...]he vitamin from [...]nism could be [...]n is attended [...]he vitamin C [...]o estimated [...]ress) but it [...]mparable [...] who are [...]eatment [...]information [...]atents of the [...] to be that of [...] 4). These authors

of one Th
to acid). in order to the provi
ation made. The vitamin
be considerably in their standard
not infrequently below standard
Twenty five cases of rheumatoid
ing degrees of severity were examined
8 controls (fracture cases)
Fig 3) —The cases of rheumatoid
fell below the minimum standard (13 mg
with an average of 8 6 mg. per 10 st body
The controls were all above standard
actual excretion) †
with sedimentation-rate.—It was found
that the (more severe cases (the severity
cases being assessed by clinical condition

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* [Since] this account was prepared for the press (the [...] that finding has been published by Heise et al 1937 [...] the administration of large doses of vitamin C in tuberc[ulosis] frequently causes a reduction in the blood sedimentati[on rate]

† [As] the control subjects often wore heavy appliances (to [...] not feasible to weigh them hence the results [...] have not been reduced to the basis of 10 st [...] would the effect of such a correction however is to [...] still higher [...] normal range for the controls [...] most of them [...] in better [...] student

mention that "individual cases varied from approximately three times higher than the average down to less than 0·1 the average values" They consider that some of the subjects examined must have been on diets deficient in vitamin C, and they add, without citing any actual data, that "generalised infections were more common among those having a low vitamin C content in their tissues") Under these circumstances a number of systematic surveys have been undertaken on experimental animals, and in the present paper some of the results are presented.

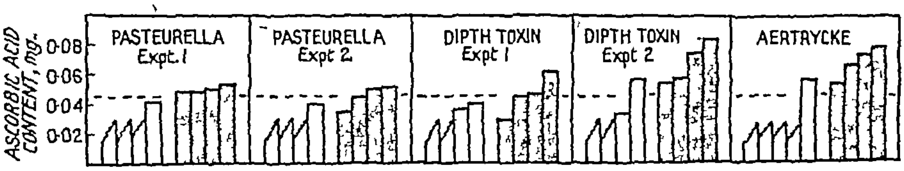

FIG 1.—Effect of various infections in diminishing the vitamin C content of the suprarenals of guinea pigs The white columns represent infected animals and the stippled columns controls A broken column indicates that the amount was less than that shown

It has been recorded (Harde and Benjamin 1935) that diphtheria toxin which, as is well known, causes extensive injury to the suprarenal glands at the same time brings about a diminution in their vitamin C content (although Torrance (1937) considers that the first effect is an increased concentration in the organ) Apart from these investigations little methodical work on the influence of various pathogenic micro-organisms or of other toxins on the vitamin C content of the body tissues seems to have been hitherto attempted

Guinea pigs have been used throughout the present work, and we have studied the effect of acute infections with the following organisms *Bacterium aertrycke*, *Pasteurella pseudotuberculosis*, and of injections of diphtheria toxin, as well as of a more chronic infection with *Mycobacterium tuberculosis* For the experiments on tuberculosis the inoculations were carried out by W P at Papworth, and for the remainder by R P at the Department of Pathology, Cambridge

Estimations were made of the amount of vitamin C in the suprarenals and liver The former organ was chosen because of the high concentration of vitamin C which it contains, and the latter because, although the concentration is less, the large bulk of the organ makes the total amount present of significance

EXPERIMENTAL DETAILS

Immature guinea pigs with an initial weight of 250–300 g were used.

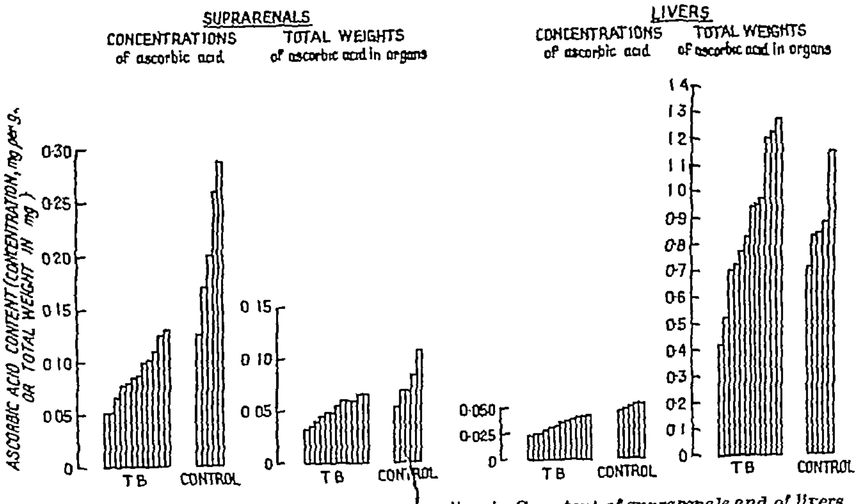

FIG 2.—Effect of tuberculous infection on the vitamin-C content of suprarenals and of livers of guinea pigs (restricted diet controlled intake of vitamin C)

Diets—In all instances the guinea pigs in the "infected" and the "control" groups had received an identical basal diet consisting of—

Bran	80	parts by weight
Oats	720	" "
Dried egg yolk	40	
Salts	8 4	
Cod liver oil	1	per cent

supplemented with the same daily dose of vitamin C—viz, 4 ml. of orange juice per day—for at least a week before the experiment Hence conditions were strictly comparable In the more acute infections, and with diphtheria toxin, the animals were given double doses of vitamin for two days before inoculation as the survival period was short (not more than three days) it was not considered necessary to continue the supplements during the actual course of the illness In the more chronic tuberculous infection the guinea pigs were allowed to have a normal mixed diet for the first 120 days after inoculation, and then both infected and control animals were restricted to the above basal diet with the same daily dose (4 ml) of orange juice for a final 30 days before they were killed.

INFECTIVE AGENTS USED

(1) *Pasteurella pseudotuberculosis*—The organism had been recently isolated from a stock guinea pig One millilitre of a 24 hour broth culture injected intraperitoneally was found to kill guinea pigs regularly in 4–5 days This dose was used for the experiments and the animals were killed by carbon monoxide after 2½ days All infected animals had swollen suprarenals, an adhesive peritonitis, and marked fatty degeneration of the liver In two animals examined, the organisms were recovered from the heart's blood

(2) *Diphtheria toxin*—A preparation was used of which 0·004 ml killed guinea pigs weighing 250–300 g regularly within four days In Experiment 3, 0·004 ml. was given intraperitoneally and the animals killed with carbon monoxide 41 hours later (one was already dead) In Experiment 4, 0·005 ml of toxin was given subcutaneously and the animals killed 48 hours later All injected animals had typical multiple hæmorrhages in the suprarenals

(3) *Bacterium aertrycke*—An old laboratory culture was used and 0·7 ml of a 1 in 10 dilution of a 24-hour broth culture was given intraperitoneally to

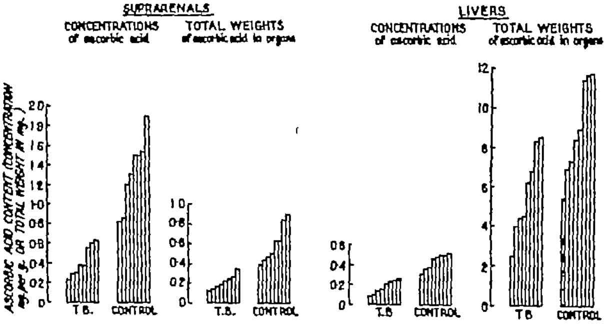

FIG 3.—Effect of tuberculous infection on the vitamin-C content of suprarenals and of livers of guinea pigs (uncontrolled diet with large intake of vitamin C)

five animals Twenty four hours later two were dead and at 40 hours one more had died and the remaining two were killed with carbon monoxide All these animals had an extensive peritonitis with marked congestion of the abdominal viscera fatty livers and free fluid in the peritoneum The suprarenals were soft and œdematous

(4) *Mycobacterium tuberculosis*—In the group of 12 "infected" guinea pigs chronic tuberculosis was produced by incomplete vaccination with heat-killed bacilli previous to virulent infection so that instead of full protection a protracted course of the disease was obtained Vaccination was performed by five intraperitoneal injections—at weekly intervals—of 1 ml of a vaccine containing 0 5 mg heat-killed tubercle bacilli the animals were infected instantaneously with 0·001 mg of the virulent sputum strain Rule of the human type. When the guinea-pigs were killed on an average five months after infection, the spleen was enlarged and covered with nodules The number of nodules in the liver and lungs varied considerably among the different animals.

Analytical procedure—The titrations of the organs for vitamin C were carried out by the microchemical method of Birch Harris and Ray (1933)

RESULTS AND DISCUSSION

Table I gives the total amounts of vitamin C found in the suprarenal glands and livers. A large pro-

TABLE I

Total Quantity of Vitamin C in mg in the Organs of Infected Guinea pigs and Controls

Expt.	Infection	Suprarenals.		Liver	
		Control	Infected.	Control	Infected.
1	*Pasteurella pseudotuberculosis*, Expt 1	0·048 0·048 0·050 0·053	<0·030 <0·030 <0·030 0·042	0 53 0·69 0·89 0 73	0·65 0·77 0·88 1 43
2	*P pseudotuberculosis* Expt. 2	0·035 0·045 0·050 0·051	<0·031 <0·031 <0·031 0·041	0 49 0 60 0 52 0 77	0 53 0 59 0·64 0 70
3	Diphtheria toxin Expt. 1	0·030 0·045 0·046 0·062	<0·029 <0·029 0·036 0·040	0 56 0·66 0·61 0·74	0·62 0 68 0·79 1·00
4	Diphtheria toxin, Expt. 2	0·051 0·067 0·074 0·084	<0·030 <0·030 0·034 0·056	0 46 0 49 0·68 0 91	0·67 0 70 0·81 0 92
5	*Bacterium aertrycke.*	0·051 0·066 0·073 0·078	<0·027 <0·027 <0·027 <0·027 0·067	0 59 0 68 0 72 1·23	0 37 0 58 0 60 0·64 0·67
6	*Mycobacterium tuberculosis*	0·055 0·070 0·070 0·085 0 100	0·032 0·036 0·040 0·046 0·048 0·048 0·054 0·060 0·060 0·060 0·060 0·060	0·717 0·813 0·830 0 881 1 160	0 426 0 526 0 700 0 710 0 704 0 817 0·924 0·9 2 0·951 1·07 1·216 1·70

portion of the infected animals were found to have such greatly diminished amounts of vitamin C in their suprarenals that it could not be accurately estimated Hence we are unable to record exact *average* values for each group When the results are graphically arrayed, however (Figs 1 and 2) the difference between the infected and control animals is well seen Out of the 21 animals with the 'acute' infections, all but two had less than 0 044 mg of vitamin C in their two glands while out of the 20 controls all but two had more than this amount (Fig. 1) In the tuberculous infection of longer standing where the animals had been dosed for a greater period of time and the infection was less acute the general levels are somewhat higher but here again a difference is apparent between the infected animals and the controls (Fig. 2) All the 12 infected animals had less than 0·070 mg. of vitamin in their two suprarenals and only one out of five controls had less than this amount.

TABLE II

Comparison of Weights of the Livers of Tuberculous and Normal Guinea-pigs

Tuberculous (g)		Control (g).
18 1	29·0	14 3
18·6	29·8	16·0
18·7	30·2	16 6
20·2	41·7	18 4
25·3		21 5
25 7		
25·7		
27 4	av 25·9	av 17 4

Owing to the frequent presence of œdema in the suprarenals of the infected animals the actual concentrations of vitamin C found are relatively even more subnormal than the total amounts as given above perhaps misleadingly so and they are therefore not included in the Table.†

The livers show little significant difference as between the infected and control animals in the case of the acute infections In the livers of the tuberculous animals on the other hand there is some evidence of a lowered concentration of the vitamin in the infected group (The total amounts present in the livers are not significantly different, an apparent anomaly which is due to the considerable enlargement of the livers of the tuberculous animals Table II) It seems probable therefore that in the more long standing or "chronic" infection the vitamin reserves may eventually be depleted from the liver as well as from the suprarenal glands

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† It should be mentioned that not only in the acute conditions, such as diphtheria pasteurellosis, &c. but also in experimental tuberculosis the suprarenals show definite histological changes Pagel (1927) found swelling and degeneration of the endothelial and organ cells hyperæmia and myeloid metaplasia in the central parts of the suprarenal in tuberculous animals

EXPERIMENTS WITH TUBERCULOUS INFECTION ON NORMAL DIETS

A comparison of the vitamin C reserves of infected and control guinea pigs has also been made in a further series of tests in which the animals were allowed a normal, unrestricted diet, containing large amounts of vitamin C in place of the limited daily dose given in the experiments described above The diet consisted of sugar beet pulp, pollard, bran, and cabbage

Although in these experiments the daily intake of vitamin C was not controlled, a marked diminution in the reserves of the infected animals as compared with the control animals was again apparent (Fig 3) As was to be expected the reserves, both of the infected and the control groups, were at much higher levels than when the intake of vitamin C was lower (cf Fig 2) It seems worthy of note that the absolute amount of vitamin C destroyed under the influence of the infection increases as the reserves increase—that is the infection causes the disappearance always of a considerable *proportion* of the reserves, whether these be high or low, and not merely of a fixed *arithmetical difference*

SUMMARY

Guinea pigs suffering from an acute infection with *Bacterium aertrycke* or *Pasteurella pseudotuberculosis*, or from the effects of diphtheria toxin showed a considerable diminution in the amount of vitamin C present in their suprarenal glands as compared with controls which had received the same dietary intake of vitamin C The vitamin C in the liver was not significantly affected. In a more chronic tuberculous infection in guinea-pigs there was a diminution in the amount of vitamin C in the suprarenal and also some fall in the concentration of the vitamin in the liver

We are grateful to Dr M A Abbasy who kindly helped with several of the titrations, and to Mr A Ward for expert technical assistance

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CLOSING OF THE HOXTON NURSERY SCHOOL.—For four years the nursery schools committee of the Save the Children Fund has run a nursery school at Hoxton in a building let for this purpose by the vicar and churchwardens of the Holy Trinity Church at a very low figure The building is so old and unsuitable that it could never be recognised for a grant by the Board of Education and the school costs the committee £500 a year to run For this sum with the help of a grant from the board two schools of the same size could be supported in the Special Areas No other site at a suitable rent is available in Hoxton, and the committee has therefore reluctantly decided to close the school

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EARLIER DIAGNOSIS OF PULMONARY TUBERCULOSIS WITH REFERENCE TO SYMPTOMS

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THE treatment of pulmonary tuberculosis has advanced very rapidly of recent years , and it is still advancing, although the rate of progress is likely to become appreciably slower in the future unless some new principle of treatment can be applied It is probable that we have reached a point beyond which we shall not make much progress, at any rate while working along our present lines, and any further improvement in our results will of necessity depend upon the initiation of treatment at an earlier stage of the disease Of course it is very satisfactory to realise that the proportion of deaths from this disease has fallen considerably during the present century, but it must be realised that far too many people still die from pulmonary tuberculosis The purpose of the present paper is to consider whether diagnosis is achieved as early as it could be, for if this should be found to be the case it would follow that we cannot hope for any dramatic improvement in our results in the near future

The early recognition of active pulmonary tuberculosis is dependent firstly upon the patient, who should consult his doctor at the earliest possible moment, and secondly upon the doctor, who must recognise the significance of the symptoms that are presented for his consideration Early diagnosis will thus always depend upon recognising the significance of the early symptoms by both patient and doctor In a report on 8766 cases treated at the Brompton Hospital Sanatorium Frimley, during the years 1905–31, Hartley, Wingfield, and Burrows (1935) have presented a very full analysis, with special reference to the expectation of survival after the diagnosis has been made Some of the conclusions are of great importance, as, for instance, that the mortality experienced by patients suffering from pulmonary tuberculosis depends almost entirely upon the classified stage of the disease on entry—in other words, that early diagnosis is of supreme importance in determining successful treatment A statement is appended however which appears to suggest that the diagnosis is at present made at the earliest possible stage in a high proportion of cases It is desirable to quote this in full

> "Therefore if the results have not improved and leave much to be desired, it follows that the majority of patients still do not present themselves for treatment until the disease is so extensive that they cannot fall into the selected category amenable to modern therapy For this there can be but one reason—that pulmonary tuberculosis during a considerable period of its course is in the main a *symptomless disease* for, although isolated instances to the contrary may be met with it is unreasonable to suppose that the average individual will ignore such symptoms as progressive loss of weight malaise, cough sputum, hæmoptysis or dyspnœa, for long periods without seeking advice A careful examination of the histories of patients coming to Frimley shows it is true, some instances in which medical advice has been sought and such symptoms have been misinterpreted but these instances are rare and certainly during the last ten years in the average case diagnosis has been established and treatment commenced with reasonable promptitude after medical advice had been obtained '

This conclusion is so fundamentally important that it seems desirable that some statistical evidence should be sought in order to determine whether the disease itself is to blame or whether either the patient or the doctor should be held responsible for failure to recognise the earlier stages

DURATION OF SYMPTOMS

Accordingly the records of the patients attending my out patient clinic at the Royal Chest Hospital from 1928 to 1936 have been examined with a view to determining the duration of the symptoms before a diagnosis of pulmonary tuberculosis was first definitely made The new cases in which there had been previous sanatorium treatment or a past history of known pulmonary tuberculosis have been excluded and only the freshly diagnosed cases have been selected In this group there were 340 patients of whom 173 were male and 167 were female The average duration of the chief symptoms before diagnosis was made is set out in the Tabl

Table showing Duration of Symptoms before Diagnosis of Pulmonary Tuberculosis was made

	3 months and under	3-12 months	Over 12 months	Total.
No of cases	121	134	85	340
Cough	120	131	83	334
Sputum	97	111	74	282
Hæmoptysis	10	57	83	150
Dyspnœa	45	63	53	161
Weight loss	8	91	60	[illegible]
Pain	60	57	22	139
Dyspepsia	15	15	8	38
Pyrexia	64	53	44	161
Night sweats	41	54	32	[illegible]
Fatigue	22	31	22	75

Average duration of symptoms 1·08 years

A consideration of this Table shows that significant symptoms had been present for more than three months in no less than 219 out of 340 cases In fact the average duration of symptoms on the whole series was almost exactly a year and there is no reason to suppose that this series represents anything but a fair sample of the population The symptoms which were taken are those that are universally recognised as being common and important It seems therefore that there is still considerable scope for improvement in the recognition of pulmonary tuberculosis and the thesis that pulmonary tuberculosis is a symptomless condition in its earlier stages is not supported so far as the majority of patients are concerned

In addition to the symptoms of which the patient complained additional help was given in many of these cases There was a past history of pleurisy in 85 cases exactly a quarter of the total, of pneumonia in 48 cases and of spontaneous pneumothorax in only 2

CONCLUSIONS

If cases of pulmonary tuberculosis could be accurately diagnosed as a routine within three months of the onset of the disease there could be no question that the results of treatment would show appreciable improvement yet these figures can only mean that for some reason, the diagnosis is only made in about a third of the cases at this stage

The figures do not support the contention that pulmonary tuberculosis is a symptomless disease and they therefore throw the onus of earlier diagnosis back on the patient and on the general practitioner The hospital records do not indicate how long the patients had been under medical treatment before special diagnostic measures were taken so that it is impossible to apportion the responsibility for the loss of time which was allowed to occur It is certain that patients still do not seek advice early enough but it is also highly probable that some who do so are not as fully investigated as they should be

There is consequently an indication for improvement along each of two lines In the first place the public must be taught that the symptoms already enumerated may possibly indicate early pulmonary tuberculosis and they should be encouraged to seek advice as early as possible It should also be pointed out that with early diagnosis and efficient treatment the results are very good and thus the subconscious fear which leads many patients to procrastinate may be overcome So far as the medical profession is concerned there is still room for improvement and the lines along which this is to be achieved are very simple It has been constantly repeated that patients who have cough, with or without other suggestive symptoms should always have the sputum examined as a routine and if necessary more than once If this were faithfully carried out and if a routine X ray examination were made in all cases where symptoms fail to respond favourably to routine measures there would be a considerable increase in the proportion of early cases submitted to those lines of treatment which are known to be effective in early pulmonary tuberculosis

I am much indebted to Dr S A. H Lesser who very kindly abstracted the figures from the out-patients notes for me

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MEDULLARY NECROSIS OF THE KIDNEYS

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Massive necrosis of most of the medullary papillæ in the kidneys is a recognised but not very common pathological condition Case reports and a review of the earlier work are given by Schömer (1931), Foulon and Busser (1934) Granhan (1934) and Putschar (1934) In most of these cases the necrosis was associated either with pyelitis or septicæmia and death occurred in an early stage of the lesion The clinical aspects receive little attention

CASE REPORT

The following case is of interest because the patient was under clinical observation throughout the whole course of the disease and also because she survived long enough for the necrosis to reach such an advanced stage that separation and healing had occurred

The patient was a primipara aged 18 she had had no previous illnesses of note except diphtheria when she was 9 The pregnancy was normal up to 38 weeks when she developed some pain in the right loin and frequency of micturition Nine days later the pain affected the left side also and she had a rigor She was admitted to

Prof S J Cameron's unit in the hospital on the same day, with tenderness in both lumbar regions and iliac fossæ, the urine contained much albumin, numerous leucocytes and *Bacillus coli*, but no casts or red cells The temperature was 100° F, the blood pressure 100/70 mm Hg, and there was no œdema The next day her condition continued unchanged until she went into labour in the late evening At 2 A.M, as she appeared exhausted and toxic, she was delivered by easy low forceps under gas oxygen-ether anæsthesia The child was a macerated mature female weighing 6½ lb The placenta was expressed easily without hæmorrhage At this time 10 c cm of red urine was obtained by catheter, it contained numerous red blood corpuscles, and a few leucocytes and *B coli*

Table showing Progress after Delivery

Days post part	Temp °F	Blood pressure mm Hg	Urine			Blood
			Amount c cm per day	Albumin pts per 1000	Urea per cent	Urea mg per 100 c cm
1	98		70	25·0		147
2	99	118/90	280	20·0		245
3	99	115/75	140	1 3		296
4	100	160/90	810	1 5		391
5	99	140/85	840	1 5		426
6	98	145/90	1040	1·0		
7	97	140/95	650	1 0		597
8	97	135/90	960	0 5	1 14	591
9	100	160/100	1800	1 3	0 82	474
10	101	145/100	900	1 5	0 66	435
11	101	158/105	700	1·0		405
12	101		1240	1·0		409
13	99		1490	1 0		
14	100		1430	0 5	0 61	370
15	100		640			330
16	99	132/75	840		0 69	430
17	100		960	1 0		425
18	100		1680			463
19	101	120/90	680			495

Progress and treatment —After delivery she developed an acute renal insufficiency which continued till death 19 days later The main features of her condition are shown in the Table In view of the oliguria, she was given two intravenous injections of 50 c cm of 50 per cent glucose on the third day post partum without obvious effect On the fourth day she was given 250 c cm of the same solution in one injection, and this started a moderate flow of urine which continued for the rest of the illness As however the urine was relatively dilute (the urea concentration factor never reaching 2) and as the blood urea was rising steadily, an attempt was made to force a sufficient diuresis On the 8th and 9th days she was given a continuous intravenous infusion of 5 per cent glucose in saline, 3 5 litres being given each day The urine showed some increase but part of the fall of blood urea was probably a dilution effect On the 8th day the urine contained numerous *B coli* and staphylococci but no cells or casts From the 10th to 13th days there was a little vomiting A further attempt was then made to produce a diuresis, 3 5 litres of the 5 per cent glucose saline were given intravenously each day on the 13th and 14th days, but the response was again unsatisfactory All this time she showed little more general disturbance than would be accounted for by the temperature and was mentally normal No recognisable perspiration could however be produced at any time despite vigorous and continued treatment with hot packs On the 17th day she became drowsy, the next day she had some further vomiting and became comatose, and she died on the 19th day

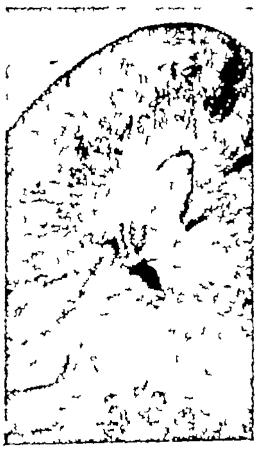

FIG 1.—Naked eye appearance of kidney natural size the necrosed papilla is becoming separated at its base

Pathology —At autopsy there was œdema of the lower lobes of both lungs and of the pia arachnoid The uterus was involuting normally The left ureter was normal but the right ureter was moderately dilated The perinephric fat on both sides was tough and œdematous

The kidneys showed identical appearances They were very pale and large, weighing 300 g each On section, the cortex and medulla were both broad and pale The cortex contained a few small abscesses about 1 to 2 mm in diameter, these were scattered irregularly and were not grouped like ordinary pyelonephritic abscesses The essential lesion, however, was a necrosis which affected the apices of the medullary pyramids, usually cutting off the entire papilla (Fig 1) One kidney and half of the other one were dissected to study the frequency and extent of the lesions Most of the papillæ showed necroses similar to that illustrated, a few showed necrosis of only half of the papilla, and in three no obvious lesion could be found The necrosis was judged to be of some standing, probably 2 or 3 weeks The necrosed parts were only loosely attached and could usually be picked off, leaving a smooth surface beneath Commencing separation of the necrosed tissue can be seen in Fig 1 at the point opposite the tip of the papilla No active pyelitis could be found

Microscopically the papillæ show gross ischæmic necrosis in an advanced stage In the necrosed area no nuclei can be stained, the ghosts of the ordinary medullary tubules are easily recognisable but there is no sign of any inflammation old or recent (Fig 2 A) At the line of demarcation, the edge of the necrosed tissue shows infiltration with polymorphs and some disintegration In places separation is still occurring, the medulla above has some granulation tissue at its surface and epithelium is spreading in from the pelvis to cover this (Fig 2 B)

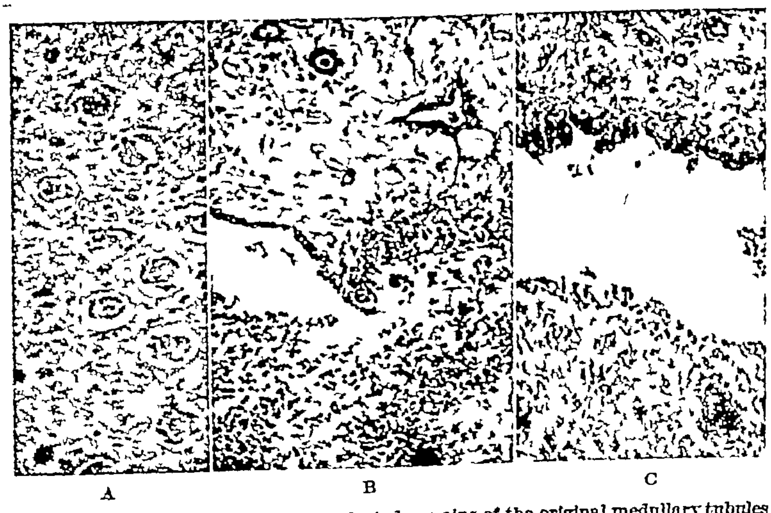

FIG 2 A.—Necrosed papilla non nucleated remains of the original medullary tubules (× 104)

FIG 2 B —Process of separation of necrosed papilla the live medulla above abuts by a mass of granulation tissue on the necrosed tissue below whose edge is here infiltrated with polymorphs Epithelium is spreading in from the left (× 104)

FIG 2 C.—Completed separation of necrosed papilla a continuous layer of epithelium covers the live medulla above and the polymorphs have disappeared from the surface of the necrosed medulla below (× 104)

At most of the line of demarcation separation is complete a continuous layer of low columnar epithelium with young fibrous tissue beneath covers the new surface of the medulla (Fig 2 c) The medullary tubules end blindly above the fibrous tissue layer none of them penetrate *the fibrous tissue and epithelium to reach the renal pelvis.* The kidney tissue above shows marked distension of all collecting tubules and second convoluted tubules by casts " consisting of necrosing cells which are probably polymorphs. The first convoluted tubules are all dilated and have a low columnar epithelium a few of them contain some albuminous debris in their lumen. The glomeruli are normal and their capsules are not dilated In places in the cortex there is some interstitial œdema and also very occasional small abscesses of apparently only a few days standing No evidence can be found of any pyelonephritic lesions which can be considered to have antedated the papillary necrosis No thrombi can be found in any vessels. Sections across the pelvis and upper ureter show quite healthy epithelium with no inflammation in the walls

DISCUSSION

The pathological appearance is very characteristic even on cursory naked-eye inspection it is clearly distinguishable from the foci of suppuration in the medulla in cases of pyelonephritis The necrosis is ischæmic in type it affects the papillæ of nearly all the medullary pyramids and is sharply localised to that site

Several possible explanations of the interruption of the blood-supply in these specific areas may be mentioned. (*a*) Capillary thrombosis (Schömer 1931) (*b*) spasm or acute degeneration of the walls of the medullary vessels comparable to the similar process in cortical necrosis of the kidney (*c*) pressure on vessels by acute inflammation in the medulla (*d*) pyelovenous backflow of purulent urine (Foulon and Busser 1934) (*e*) toxic, as in the experimental papillary necrosis produced by vinylamin and certain of its derivatives (Levaditi 1901) by tetrahydroquinoleine and certain of its derivatives (Rehns 1901) and by bromethylaminbromhydrate (Oka 1913) comparable to cortical necrosis of the human kidney in dioxan poisoning (*f*) spasm of the sphincter muscles in the papillæ or in the pelvis around them

In the present case there is no histological evidence of a cause The condition is rather far advanced and any slight original cause may have healed. But no lesion can be found in the kidney which cannot be explained as secondary to the necrosis or to the obstruction. The cortical abscesses and polymorph casts in the tubules appear to be due to sepsis following the obstruction. Clinically there is a fairly definite history of bilateral pyelitis of pregnancy for a few days before delivery The actual time of onset of the necrosis was probably at about the time of delivery as the hæmaturia and very heavy albuminuria without hypertension occurred at that time and the acute renal failure began then The diuretic treatment cannot be considered a responsible factor it is a standard treatment for post-partum anurias and has never been observed to damage the kidneys

The necrosis cuts across all the main collecting tubules from the whole related segment of kidney and thus produces a complete obstruction to the drainage from that segment Most of the urine excreted comes presumably from the few parts of the kidney with intact medulla The excretion of a moderate amount of urine with a very low urea concentration relative to that in the blood is typical of any condition where only a very small portion of healthy kidney is able to function; it is seen for instance in cases of cortical necrosis that have a few of the deeper nephrons intact

The rapidity of the initial rise of blood urea is a feature of all post-partum anurias and oligurias and depends on the metabolic changes involved in parturition and involution. The temporary fall in this case at about 14 days may possibly be related to a leakage of urine from the affected parts of the kidney past the separating necrosed papillæ, and the subsequent rise to a closure of this avenue of escape by scarring and epithelialisation at the line of demarcation

The hypertension that developed during the illness cannot be explained satisfactorily it occurs in some post-partum anurias or oligurias due to cortical necrosis or tubular obstruction by casts but is completely absent in other cases of similar causation

SUMMARY

A case is described of post-partum oliguria with very high blood urea At death 19 days later the cause of the renal insufficiency was found to be necrosis of nearly all the medullary papillæ in both kidneys

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Clinical and Laboratory Notes

AN UNCOMMON INFECTION OF THE URINARY TRACT WITH TERMINAL SEPTICÆMIA

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LABORATORY TECHNICIAN AT THE HOSPITAL

THE pathogenicity of organisms of the subtilis or anthracoides group is considered doubtful and references to examples of pathogenic activity on the part of these bacilli are few Topley and Wilson (1936) note that this group seems to include species ranging from virulent variants of *Bacillus subtilis* to avirulent variants of *Bacillus anthracis* and mention that Axenfeld (1908) lists *B subtilis* as a cause of severe eye lesions Sweeny and Pinner (1925) state that *B subtilis* may invade the blood stream of patients whose powers of resistance are lowered by some fatal disease while Senge (1913) and Wilamowski (1912) include pseudo-anthrax bacilli as the possible causative agents of meningitis and pneumonia

A general labourer aged 42 was admitted to the County Mental Hospital Rainhill on Nov 12th 1920 Apart from the fact that he had been a prisoner of war for four years there was nothing significant in his history The blood-sigma test was negative on admission. The diagnosis established was dementia præcox of the paranoid type He became much enfeebled in mind, and for a considerable period had been sullen, morose and hostile with impulsive outbursts of violence and destructiveness At the time of his illness he had refused solid food for 10 days but had taken adequate amounts of egg-and milk

On Nov 22nd, 1936, he was found to have a distended bladder, he angrily resented catheterisation and, in view of his resistiveness, rectal examination was not immediately performed Catheterisation was continued twice daily and on Nov 24th laboratory examination disclosed the presence in the urine of a bacillus showing chain formation, at first suspected to be a contamination, but a similar organism was found in successive specimens obtained under strict aseptic conditions, and cultures were made In addition to masses of these bacilli (some showing spore formation), the urine contained a large amount of albumin and the centrifuged deposit showed pus cells and an occasional renal tube cast (epithelial and leucocytic) Six days later, when the catheter was passed, it became evident that its lumen was blocked by thick pus A serum syringe was attached and approximately an ounce of this pus was aspirated this was followed by a free flow of urine containing ropy streaks of blood-stained pus On rectal examination a peculiar mass was palpated in the position of the prostate, in parts of firm consistency, in other parts definitely softened, and the diagnosis of prostatic abscess was thus confirmed

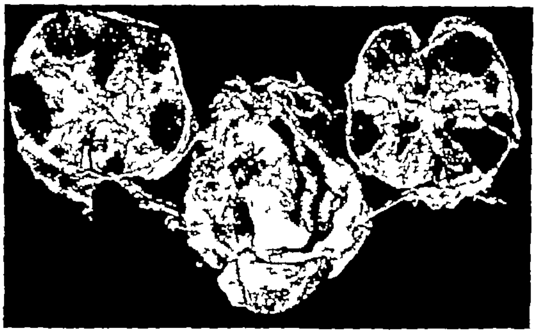

FIG 1 —Specimen showing infarcted kidneys ureters thickened bladder and prostate The glass rod is in the orifice of the urethra

The temperature, previously normal, rose to 103° F and an irregular pyrexia followed For 24 hours there was incontinence of urine, but on Dec 2nd retention recurred, and on the next day the bladder was much distended, atony was pronounced, tenderness was present on pressure over the left kidney, and a purpuric rash developed on the abdomen and right thigh The general condition rapidly deteriorated, there was slight vomiting on Dec 4th, but death occurred early the next morning without any obvious evidence of meningism

Post mortem findings —External appearance the body was that of a muscular man in a fair state of nutrition, the lower abdomen was distended and definitely discoloured Heart musculature soft and toxic, weight 287 grammes Lungs showed terminal congestion only Intestinal tract stomach and intestines normal, liver large, soft and toxic, weighing 1903 grammes Urinary tract kidneys, ureters, bladder, and prostate fixed in situ (Fig 1), both kidneys extremely swollen, capsules thickened and fatty, kidneys showed a number of large infarcts (well seen in Fig 1), scrapings from the kidneys showed large masses of bacilli, seen also in section of kidney Ureters were dilated, thickened, and contained thick pus in considerable amount Bladder was distended contained urine under pressure, pus was present, bladder walls were thickened and granulomatous Prostate was greatly enlarged and cavernous pus was easily expressed from its sinuses, masses of bacilli seen on section

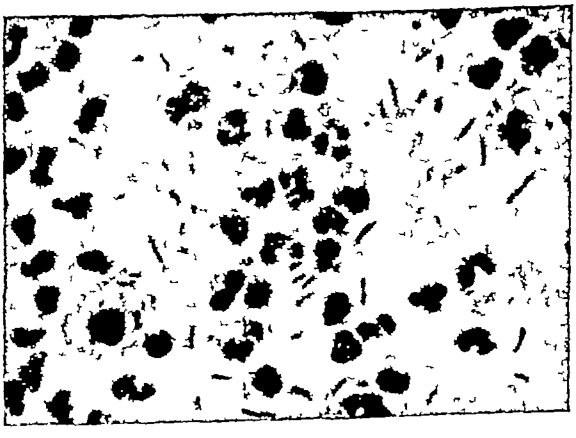

FIG 2 —Scrapings from meninges showing organisms (1/12 in oil immersion)

Spleen and ductless glands showed no macroscopic abnormality Brain on reflecting the dura, the encephalon was seen to be coated with a layer of thick pus of varying depth, more prominent on the vertex, scrapings from the meninges showed the same organism (Fig 2), brain was soft and œdematous, weight 1385 grammes, no macroscopic abnormality of cerebral hemispheres, cerebellum, or brain stem was found

Bacteriology —The pus from the catheter and subsequent specimens showed much necrotic material The infecting organism in direct films showed oval spores, situated subterminally, somewhat irregular staining by Gram, and a strong tendency to chain formation Culturally the organism showed the characteristics of *B subtilis* according to Topley and Wilson's classification The growth on agar was membranous, in broth it showed some turbidity with a surface membrane, gelatin and blood-serum were liquefied, litmus milk was clotted, peptonised, and decolorised, methylene blue was reduced, and glucose, maltose, and saccharose were fermented, showing acid, indole was not produced

Our thanks are due to Dr E F Reeve, the medical superintendent, for permission to publish the case

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GOUT SECONDARY TO A RENAL LESION

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E SAMUEL, M B Lond, M.R C S Eng
HOUSE PHYSICIAN AT THE HOSPITAL

Garrod's statement in 1863 that gout is directly due to renal inadequacy is generally held to have been disproved. In the following case, however, the disease seems to have been caused by failure of excretion of uric acid resulting from an unrelated lesion of the kidney We have been unable to find a report of any similar case

The patient, a man of 50, was first admitted to the Hospital of SS John and Elizabeth in December, 1935 He had had pain and swelling in the right knee for thirteen weeks and in the elbows, wrists, and fingers for one week. There was no relevant family history but he had had an operation at which the left kidney was found to be tuberculous In view of the condition of the other kidney, nephrectomy had not been done On examination the right index finger was swollen with limitation of movement, there was a bursitis over the right olecranon, and in the left hand the first interphalangeal joint of the index finger was swollen and red Radiograms of the joints showed nothing abnormal. The legs were normal, and there were no signs of disease in chest and cardiovascular system, the blood pressure was 138/70 In the abdomen both kidneys were palpable and there was tenderness in right loin Radiography showed calcification of the right kidney and partial calcification of the left The urine contained pus and fresh blood but no casts or tubercle bacilli The blood uric acid was 3 5 mg per 100 c cm, the blood urea 46 mg, and a urea clearance test gave 44 per cent of average normal in the first hour The blood sedimentation rate was 42 mm at the end of one hour and 74 mm in two hours A blood count showed 4 500 000 red cells (hæmoglobin 50 per cent) The Mantoux reaction was strongly positive the Wassermann reaction negative and a complement-fixation test for gonococci negative

The patient was readmitted on April 7th 1937 again with considerable pain in right knee feet and hands This had begun fifteen weeks previously in the knee and was accompanied by reddening and swelling of the joint These symptoms lasted two or three weeks and after a week of freedom from pain similar symptoms had appeared in the right hand Tophi were now found to be present on both ears (see Figure) and on the terminal joints of the index fingers of both hands, and there were spindle shaped swellings with antero-posterior flattening of the first and second interphalangeal joints of the index finger of right hand The blood pressure was 140/70 the urine contained blood clot, but no casts and no bacteria The blood cholesterol was 130 mg per 100 c cm the blood uric acid 5·0 mg and the blood urea 43 mg A urea-clearance test gave 38 per cent. of average normal in the first hour and 49 per cent in the second. The specific gravity of the urine was 1032 after twelve hours fasting Radiography now showed changes in all the phalangeal joints, and narrowing of joint space with some erosion around the head of the proximal phalanx of the ring finger There was a well-defined area of gouty erosion in shaft of tibia above joint space Tophi from ear and finger gave a positive reaction for uric acid

Tophi in the ear

Llewellyn states that the predisposition to gout is always inherited, but that the actual *onset* of the disease may be determined by an extraneous factor or disease

In the present case however there is no evidence of an inherited diathesis no symptoms arose until the patient was 48 years of age and the onset was related to a definite failure of excretion of uric acid due to tuberculous calcification of both kidneys.

Our thanks are due to Dr G Loughborough for the X ray reports, Dr F Kellett for the biochemical investigations and Dr L Watt for the photograph.

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MODIFIED COFFEY S OPERATION FOR TRANSPLANTING THE URETERS

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I am anxious that this small modification of Coffey's technique for transplanting the ureters should be tested by other surgeons with more material than I have at my command. It is based on one successful case; many years might elapse before I could quote a dozen and I consider it to be—whatever the final verdict—an essentially safe procedure.

The solitary case on which these notes are based was that of a young woman whose anterior bladder wall and urethra had been entirely destroyed by post partum gangrene and the efforts of surgeons. Her recovery was uneventful and there was a noticeable absence of kidney pain and fever One fistula closed about two weeks before the other I performed the operation in two stages but I intend to operate at one sitting in the future

The proposed steps are as follows —

A large-calibre ureteral catheter is passed up to each kidney If the ureters are difficult to identify indigo carmine given intramuscularly is a great help Through a muscle-splitting incision at the level of the iliac crest the peritoneum is exposed and dissected inwards With the finger passed inwards behind the peritoneum the ureteral catheter can be at once identified and the ureter hooked up into the wound. The ureter is opened by a transverse incision as high up towards the kidney as possible The catheter is partially withdrawn and a measured length of tubing (about 12 cm) of a size to fit snugly into the ureter is passed up The other end left long is brought out through the incision and fixed to the skin with a stitch.

The same procedure is followed on the opposite side The stream of urine has now been diverted from the lower ends of the ureters

The abdomen is then opened by a midline incision and both ureters are transplanted using Coffey s valve technique The ureters are now functionless strands of muscle tissue they are easily identified by the catheters which are withdrawn completely as soon as each ureter is picked up The snug embedding of the ureters in the sigmoid wall is rendered much easier by the absence of indwelling catheters, and is now so safe that I think one can dispense with an intraperitoneal drain. I sutured the posterior peritoneal wall direct to the sigmoid and completely restored the ureters to their original retroperitoneal position. Should any leakage occur it would find its way up to the temporary fistulæ and out through the lateral wounds

A week after the operation both ureteral tubes are withdrawn for the exact length of their intra ureteral insertion and left in the wound to drain until more urine is passed by the rectum than by the lateral wound fistulæ The tubes may then be gradually shortened until the fistulæ have healed

COMMENTS

Advantages—There is no urinary stasis in the kidney pelves or ureters. If Coffey s catheter technique is used it will be noticed that when the lower end of the ureter is closed tightly round the short rubber tubing that surrounds the catheter urine immediately accumulates in the ureter around the instrument. This urine will presumably have to find its way back to the kidney pelvis before it can be slowly discharged through the small and inadequate channel of the catheter If one tries to insert a tube into the ureter that completely fills the lumen the embedding of the ureter plus tube into the sigmoid wall becomes a precarious and unsatisfactory business. I have no experience of Coffey's last modification (by stitch fistula) but it obviously throws a great strain on the kidney and can only be done one side at a time. Secondly the abdomen is opened only once and no drain should be required. Finally the transplantation can be done much more simply and effectively when the ureters are not made rigid and bulky by indwelling catheters and tube collars. With a stitch through the cut end of the ureter passed into the lumen of the bowel, and a small nick made in the mucosa through which, with the help of the stitch the ureteral end can be drawn, I believe that this part of the operation can be done as aseptically as in Coffey's stitch fistula technique

Disadvantages—There are three incisions But if a catheter can first be introduced into each ureter it

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BRITISH MEDICAL ASSOCIATION

MEETING IN BELFAST

PROCEEDINGS OF THE REPRESENTATIVE BODY

THE representative meeting opened in Belfast on July 16th, under the presidency of Mr H S SOUTTAR. He is chairman for the last time and Dr H G DAIN is to succeed him next year The president, Prof R J JOHNSTONE, representing the medical profession in Northern Ireland, welcomed the delegates to Belfast During the first session a civic reception was given to the conference by the Lord Mayor, Sir CRAWFORD M'CULLAGH, Bt, in the Assembly Hall Sir KAYE LE FLEMING (chairman of council), in moving the adoption of the annual reports, said it had been a good year for the British Medical Association, which had never stood higher than it did now

Dr COLIN D LINDSAY (Plymouth) was elected president for 1938–39, and Dr R G GORDON (Bath) deputy chairman of the Representative Body

The Special Needs of General Practice

Much discussion followed the proposal of Manchester (Dr R BOYD) to set up a "general practitioners' committee," to consist of members predominantly engaged in general practice whose duty it would be to consider matters specially affecting them Other committees, he said, had done well for special branches of the profession, sometimes they acted in ways contrary to the welfare of the practitioner, who was inarticulate because his hours of work gave him no leisure to express his grievances—Dr J W BONE (chairman of the medico political committee) pointed out that there were already committees attending to the interests of general practitioners, e g, in regard to national health insurance, public health, part time appointments and the fees for them—Dr J C MATTHEWS said the welfare of general practitioners was in the hands of all the committees of the association The setting up for them of a special committee would probably result in reducing their representation on the others—Dr J MELVIN (Wandsworth) believed there was a real need for such a committee, Dr HENRY ROBINSON felt certain there would be overlapping and interference, and Dr DAIN wanted to know what the work of the special committee would be Nobody had made it clear what part of the general practitioner's work was not being looked after—Dr S WAND (Birmingham) thought the real trouble was that central policy had never been implemented at the periphery because doctors had not taken the trouble to work it out in their own districts

The motion was lost by a large majority

The claims of the general practitioner were again brought forward by Dr ERNEST WARD (Torquay) in a motion proposing the inclusion of a general practitioners' section among the scientific sections—Sir EWEN MACLEAN explained that general practitioners were widely distributed among the other sections, and the motion was lost

Anti-gas Measures

Sir EWEN MACLEAN (chairman of the science committee) said that in accordance with its instructions last year the council had handed on to various national medical organisations its conviction that the use of poison gas in warfare was inhuman in its results and degrading to civilisation, and had advocated the coöperation of the medical profession in all countries to prohibit its use The B M A. council, he said, had been requested by the Medical Peace Campaign to inquire into the value of anti chemical warfare measures, and was in touch with the Home Office, from whom an important letter had been received In this letter it was stated that the Government were satisfied that the arrangements made were sound and satisfactory if carried out under good conditions They had never claimed the possibility of 100 per cent safety Merely to shut the doors and windows provided a modicum of protection, and the gas proof room was the first line of defence, respirators coming second The civilian type of gas mask, tested by the same method as the military type, had proved equally successful over a shorter period The B M.A council, said Sir Ewen, had placed the local machinery of the association at the disposal of the Home Office for the instruction in anti gas measures of medical veterinary, and dental practitioners Sixteen whole time instructors had been appointed, and up to date over 6000 medical practitioners had been trained

Dr ELIZABETH CROSKERY (Tunbridge Wells) remarked that eight million people would be unable to provide gas proof rooms She deprecated inducing a sense of false security and encouraging among the young the idea that war was inevitable

Further action was left to the council

Anæsthetics in Dental Practice

Dr J W BONE spoke of the dental benefit regulations in connexion with the administration of anæsthetics The existing policy of the association was that for a simple administration of nitrous oxide or similar anæsthetic a fee of 10*s* 6*d* should be charged, reduced to 7*s* 6*d* if more than one case was treated at a session, the fee for other anæsthetics was one guinea The Dental Benefit Council had recently set up a scale of their own, two items of which were below the association's minimum—the charge of 5*s* for extraction of teeth up to the number of four, and 7*s* 6*d* for from five to eight teeth. This was an injury to the medical profession, they should not be asked to give anæsthetics for less than 10*s* 6*d* a time An offer to negotiate on a basis of 10*s* 6*d* for 1 to 8 teeth, 12*s* 6*d* for 9 to 12, 17*s* 6*d* for 13 to 16, and £1 1*s* for 17 or more teeth, had met with nothing but a formal acknowledgment from the Dental Benefit Council Dr Bone believed that any attempt to stiffen the present policy would lead to the transfer of anæsthetic work to dentists That would not matter provided the dentists who undertook the administration of anæsthetics had been specially trained for the task He appealed to the meeting not to ask for better terms but to uphold the present policy

An amendment by Southport, Lanarkshire, and Newcastle upon Tyne disapproved of the adoption

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is surprising how easily and through how small an incision the ureters can be identified and picked up There is also the fear of permanent fistulæ My experience with the removal of ureteral stones gave me no reason to suppose that these fistulæ would not heal equally promptly Even should a fistula occur it is by no means hopeless, provided there has been no accidental constriction down below Should this happen the surgeon has always the opportunity of making a second retroperitoneal transplantation into the ascending or descending colon higher up of a sliding scale for dental anæsthesia —Dr E W LEWIS (Southport) said it was nearly as expensive and equally responsible a task to induce anæsthesia for removal of one or two teeth as for several, and the number of extractions was irrelevant.—Dr HOWIE WOOD (Isle of Wight) agreed that the first stage was the one likely to give trouble and Dr H M BIRD (West Suffolk) said that this was often a difficult type of anæsthesia the patient being in a nervous condition from pain and wakeful nights —Dr J C ARTHUR (Gateshead) had found that patients were quite willing to pay a guinea for their dental anæsthetic realising that it was frequently in the nature of a luxury and not essential.—Dr MELVIN instanced the case of an insured patient with 17 teeth to be extracted and suffering from pyorrhœa or suspected hæmolytic streptococcus Supposing he went on to develop endocarditis it would have been much better to pull out the teeth in small numbers at a fee of 10s 6d a time He thought the scale as set out an admirable one —Dr A. H MACKLIN (Dundee) said some of the dental extractions for which he had given anæsthetics could only be described by the French word *arrachement* Haste was the cause of gum abscesses and other conditions which left the victims unable to take a decent meal unless they removed their dentures The anæsthetist should give an anæsthetic which would allow the dental surgeon time to do the work properly and a guinea was not too much for this service.

Dr BONE reminded the meeting that the amendment before them disapproved of the sliding scale and adhered to the policy of charging 10s 6d for a simple anæsthetic and a guinea for a prolonged one A sliding scale he felt was desirable if it was a proper one and many dentists were working under such schemes —Dr LEWIS agreed with several speakers that the risk was practically the same however many teeth were to be drawn —The amendment was carried by a large majority

Industrial Medical Practice

A question was raised by Dr A D FRAZER (Nottingham) in connexion with the ethical rules relating to industrial medical officers When a patient came to the industrial medical officer for some condition connected with his job the rule was that the patient's own doctor must be consulted consultation being interpreted as a letter or telephone message where this was the convenient method The rules stated that in the absence of a reply within a reasonable time the industrial medical officer shall be at liberty to assume the other doctor's agreement" This, Dr Frazer said was not in the interest of the patient treatment might be delayed for three or four days. He instanced the case of a man with a septic finger It had been dressed by his own doctor on a Friday and was very dirty when seen the following Monday He could not wait to consult anybody before attending to the patient He moved a deletion of the words insisting upon consultation.—Dr BONE upheld the necessity for coöperation between industrial medical officer and panel doctor but was willing to accept this amendment if it would make for simplicity and it was carried

Dr J S MANSON (Warrington) questioned the rule prohibiting an industrial medical officer from holding the post of certifying factory surgeon in the area where the factory is situated It was the view of the Trades Union Council that these offices should be separated because the industrial medical officer was responsible to his employer and the factory surgeon to the Government. Labour members had tried to force this into the Factories Bill but it had been resisted on the ground that the certifying factory surgeon might be the most efficient person available for the other post Why should the association lay down this rule which was not Government policy ?—Dr BONE said the ethical rules were not binding there were no penalties if in any area they were not adhered to It was important that members should assent to the view that these two posts were incompatible a proviso allowing for exceptional cases had been introduced into the Bill —Dr MANSON objected that there were many small towns in which the two posts were held by the same officer —His motion was lost by 70 votes to 60

Hearing Aids

East Kent (Dr A. M. WATTS) proposed a motion dealing with hearing aids and the manner of supplying them to deaf persons There had he said been a widespread exploitation of deaf persons by firms selling hearing aids at a charge out of all proportion to the cost of production and to the likelihood of their value The usefulness of an aid depended upon the cause and degree of deafness it could not be of equal value to all Any person thinking of buying an aid for deafness should be examined by a doctor and be advised by him whether the deafness was likely to be helped by such an appliance He should further be advised only to buy the appliance on condition it would be taken back and his money refunded if it proved unsatisfactory —Dr E H T NASH (Hounslow) spoke of the unhappiness of deaf people and quoted cases in which he had been able to change homes from something like despair to happiness by the introduction of successful aids for deaf people —Sir KAYE LE FLEMING said the position had been greatly altered by the action of certain reputable firms in London. These firms sent out on request a list of questions as to the type of deafness concerned they then sent, without charge one or two different instruments receiving back any that proved unsuitable and only charging if the appliance was satisfactory —Dr BONE suggested that the association should investigate the cost of production of various aids for deafness and try to get control by legislation of the price charged to the public. The National Institute for the Deaf issued a list of firms which charged only 5 per cent on any instrument returned.—Dr J H THOMPSON (Croydon) thought the council might be instructed to deal with the matter by publicity to the medical profession

Birching

Dr W N MAPLE (Brighton) moved that judicial birching of juvenile delinquents is highly undesirable, harmful in its effects and useless as a deterrent from crime and should no longer be statutory" Psychologists he said, were unanimous in condemning it a Board of Education inquiry had shown that over 80 per cent of juveniles so treated were recharged within a short time Finland Sweden and Norway were the only other European countries which allowed judicial birching Norway was now trying to abolish it, and Sweden had not used it for several years

Dr G F ORME (London), speaking as a magistrate and school medical officer said a great deal of nonsense had been written on the subject There were certain children who were amenable to no other treatment and it was a deterrent to other candidates for the birch —Dr NASH thought there was some misconception about the punishment. He had had the various types of castigation tried upon himself, and had come to the conclusion that the Scottish tawse—a wide strap with the end cut into five or six tongues—was a weapon of torture which led to no ill effects. The birch was a nasty implement. Many of those subjected to it were problem children not possessing the normal amount of grey matter.—Dr. E. R. C. WALKER (Aberdeen) thought doctors and psychologists were more likely to be experts about children than were magistrates.—Dr. R. G. GORDON (Bath) said he would support any magistrate who ordered the punishment to be inflicted on the parents. There was all the difference between home or school punishment and judicial birching; in the latter several days often elapsed between the sentence and its execution.—Dr. J. NUNAN (Sheffield) said that as governor of a prison it had been his duty to be present at the birching of children; he considered it revolting, degrading, and inhuman.—No vote was taken.

Doctors and Midwives

Prof. R. M. F. PICKEN (chairman of the public health committee) said that the system of full-time salaried midwives working in every area introduced by the Ministry of Health was now beginning to be operative. Local authorities were obliged to consult the local medical profession, and the majority of authorities had done so. The association's grievance was that maternity service was being dealt with piecemeal instead of as in Scotland where a comprehensive scheme secured care for women from the beginning of pregnancy to the end of parturition. One of the recommendations in the Ministry's report was to the effect that, in cases where midwives require to call in a doctor, the local authority "should be empowered to take steps to ensure that the best local obstetric skill is made available." If this meant that the local authority was to select those whom they considered most suitable the association would have nothing to do with it; but if it meant that practitioners would be asked, "Do you or do you not wish to go on the panel?", and some decided not to be included, there would be no objection. In any case this provision could not be implemented without amending the rules of the Central Midwives Board.

Dr. HOWIE WOOD said the report implied that large numbers of practitioners were incapable of dealing with obstetric emergencies. It was proposed that many of them should be excluded, county councils being given power to decide whether or no they were capable of carrying out their duties.—Dame LOUISE MCILROY thought there was a lack of enthusiasm on the part of general practitioners, and the idea was prevalent that domiciliary midwifery was slipping out of their hands into hospitals and attendance by midwives. If the family doctor was eliminated from midwifery the continuity of treatment would be lost. No consultant could follow up postnatal work as the family doctor could. Ample provision was made for care of pregnancy, confinement, and the postnatal period, but supposing a patient had hæmorrhage during pregnancy there was no fund to provide treatment outside hospital. It was out of date to talk of calling in the general practitioner only for emergencies; there were many conditions which he must deal with, and the only way to deal with them was prevention. Every pregnant woman should be seen at least three times by a medical practitioner, and this would, she believed, really help to reduce maternal mortality. Without criticising the work of midwives, was it likely, she asked, that after one year's training they were more expert than general practitioners? She appealed for coöperation between local authorities and the Ministry to retain domiciliary midwifery in the hands of general practitioners.—Dr. J. C. ARTHUR (Gateshead) had found that lower wage-earners, after paying the fees of municipal midwives, could not afford the services of a doctor. As a result they were being deprived both of the relief of anæsthesia and the proper repair of minor injuries. The object of the new Act, he feared, was not to help the patient but the midwife.—Dr. H. W. POOLER (Chesterfield) felt it hard that, having practised midwifery for 48 years, he should now be asked to submit his credentials to a lay body.—Dr. C. M. STEVENSON (Cambridge) thought that practitioners should take more part in antenatal, postnatal, and child welfare clinics as well as in domiciliary work. Antenatal work showed the practitioner what the patient's home was like and postnatal work enabled him to go into the home before the patient was up.

Prof. PICKEN replied that there was no objection to a selected panel of practitioners to answer midwives' calls provided the selection was carried out by an approved medical body. The divisions should signify to local authorities their willingness to coöperate so long as this principle was not sacrificed. A beginning of coöperation between the medical profession and local authorities was all to the good.

Dr. T. CRAIG (Newcastle upon Tyne), in proposing a motion deploring the passing of midwifery practice and antenatal work out of the hands of general practitioners, said that every practitioner desiring to do antenatal work should be on a rota, taking his turn at the clinics and being paid for that work. Friendly coöperation between medical officers of health, general practitioners, and midwives would procure a real maternity service.—Dr. J. A. BROWN (Birmingham) spoke of the tendency of local authorities to increase the number of maternity beds and persuade women to occupy them, thus depriving the general practitioner of his cases. Then they said that, as he was doing so little midwifery, he must have forgotten all he ever knew. There was mass suggestion that he was unfit to practise midwifery, that childbearing was a dangerous occupation, and the proper people to have charge of it were the officers of the antenatal clinics. General practitioners should staff those clinics, and if they were really interested in midwifery the women would not want to go into institutions except, on their own doctor's advice, in cases of abnormality. There should be a slogan, "Have your babies at home."—Dr. C. E. S. FLEMMING (Bradford-on-Avon) said that antenatal work might be done by midwives, but they were not capable of assessing the findings at the antenatal clinic.—Dr. WAND said it was the opinion of the association that a woman was safer in her own home than in an institution.—Sir EWEN MACLEAN, speaking as president of the British College of Obstetricians and Gynæcologists, did not agree with the view expressed that consultants were in favour of a midwifery service which excluded the general practitioner. Normal cases ran a greater risk in a hospital not carefully conducted than in their own homes. Prontosil provided a means of securing safety up to a point.—Sir KAYE LE FLEMING said the real root of trouble was political. Politicians had talked until every one was scared, and the Government had been driven to take action. A committee of inquiry was set up, on which the association had very small representation, and the report was presented to the

Ministry without being referred to the association. The Minister had promised Parliament to do something and so he took one of the committee's recommendations—the provision of a midwife for every confinement—a piecemeal action simply to satisfy Parliament It was absurd for the medical profession not to have proper access to the local health authority The proper way to tackle the maternal mortality problem was through the medical profession

The New Scottish Maternity Service

Dr J B MILLER (chairman of the Scottish Committee) said that under the Scottish proposals every parturient woman was to be provided with a complete service Each local authority framed its own scheme after finding the views of the practitioners in the area It had now been agreed that the doctor on the maternity panel should undertake to make five examinations viz three antenatal, one within twelve hours and another within four weeks of delivery but only to assist at the actual labour if he thought it desirable—on present experience the midwife would call him in about once in four times—for which the inclusive fee would be 30s or for insured women 25s Should the woman enter hospital before labour set in a fee of 15s was proposed These terms, he said were a great advance on anything they had got at present and were subject to revision after two years It was a big opportunity for the general practitioner to keep on his domiciliary activity

Dr A B MURRAY (Banff) said there would be disappointment in his area where the normal confinement fee was £2 2s, not including antenatal work —Dr E R C WALKER (Aberdeen) feared the proposal was penalising the conscientious accoucheur who wished to be present himself at a large proportion of confinements —Dr J C ARTHUR said that in an area like Gateshead the Scottish proposals would put into the practitioner's hands probably twice the number of confinements he was now asked to attend; 60 per cent now went to the municipal clinics —Dr A U WEBSTER (Aberdeen) thought the scheme would undoubtedly give the doctor more to do but he would welcome it.

In reply Dr MILLER said that the proposals would not affect well-to-do practices; they only referred to women who applied for maternity benefit The two years probationary period would show whether there was a general desire on the part of practitioners in Scotland to retain their midwifery work

(To be continued)

REVIEWS AND NOTICES OF BOOKS

Health and a Day

Addresses by Lord HORDER. London J M Dent and Sons 1937 Pp 213 7s 6d.

THE dozen addresses here collected were given by Lord Horder to varied audiences: his peers in the House of Lords a women's club; listeners attuned to a series of broadcasts on national health Pilgrims at lunch in New York laymen with a scientific bias attending the section of physiology of the British Association or a Friday evening discourse at the Royal Institution and groups of students in Edinburgh and in London Only three were actually delivered to doctors (though all will interest them): of these the estimate of John Hunter might be classed as a stimulant the plea for direct action in medicine as an alterative and the essay on the clinician's function as a purge Lord Horder demands an elimination of irrelevant and expensive aids to diagnosis, a return to simplicity with a dash of courage and independence to that bedrock of clinical medicine which should never have been abandoned Those who watched with him the birth and early growth of clinical pathology will enjoy his picture of the incursion of this virile adolescent into the sickroom brusque and truculent like a cuckoo ousting his more timid and gentle colleague from the latter's legitimate sphere' Was medicine really taped at last? By no means some clinicians at least kept their heads and showed that the capacity to neglect is as important as the capacity to take notice It is not only in the rejection of unessential methods of investigation that a proper sense of values becomes manifest The ability safely to omit which Lord Horder regards as a sign of ripe clinical acumen is also the mark of the expert in other fields notably in oratory and no redundant phrase or flourish mars the prose informal without being colloquial as befits the spoken word which makes these expositions of his ideas a pleasure to read and read again

Treatment in Psychiatry

By OSKAR DIETHELM M.D Professor of Psychiatry Cornell University Medical College New York New York: The Macmillan Company Pp 470 17s

SOBER descriptions of psychiatric treatment are as rare as sober notions of what it can achieve Genuine psychiatric treatment and psychotherapy are held by some to be synonymous terms to others the former means custody and drugs, and the latter means claptrap and still another partisan group insists on somatotherapy as the only active and honest means of treating the mentally ill Sharp distinctions are also drawn by protagonists of various schools of thought—e g neurosis must be treated causally and psychologically psychoses in contrast must be treated expectantly or with palliatives Advocates of this or that procedure seldom refrain from vilifying other methods while making excessive claims for their own A balanced account of what can be done to help the patient with psychological troubles is seldom written and when it does get written it often makes dull and sluggish reading; the wise maxims (though constantly ignored in practice) read like platitudinous copybook stuff the qualified statements seem to argue pessimism and uncertainty the avoidance of jargon, speculation over zeal and other particularist faults makes the thesis humdrum

Prof. Diethelm's book illustrates alike the merits and the difficulties that attend a workman-like attempt to set down the treatment given nowadays in well-ordered psychiatric clinics. Although the author disclaiming any originality for his book states that it is based on the teaching and methods of treatment of Adolf Meyer under whom he worked for ten years it would be misleading to regard it as characteristic of any one school or point of view its virtue lies in its catholicity The chapter headings in the general part indicate this study of personality treatment in general suggestion and hypnosis psycho analytic procedure various psychotherapeutic procedures (methods of Adler Jung Burrow Rank and Stekel Dubois Kronfeld) and distributive analysis and synthesis Hydrotherapy, diet, drugs, occupation, social care, exercises, and recreation likewise receive attention, particularly in the more specialised chapters dealing with individual reactions, such as schizophrenia, excitements and depressions, organic psychoses, psychoneuroses, sexual difficulties, and drug addiction The matter is set forth clearly, if repetitively, with a sufficient attention to detail The bibliography is unsatisfactory , the case records are interesting, though they do not always convince us of the success of the treatment Although there are warnings against ill-based hopes and promises, the problems of actual management are at times slurred over Such faults as these, however, are trivial in comparison with the value of the work as a sensible statement of what good psychiatrists do for their patients, in hospital or in private

Source Book of Orthopedics

By EDGAR M. BICK, M.A., M.D , Adjunct Orthopedic Surgeon, Hospital for Joint Diseases, New York. Baltimore The Williams and Wilkins Co , London Baillière, Tindall and Cox 1937 Pp 376 18*s*

WHAT exactly is a "source book" ? In this case we are told that it is "History, but not dead history Valuable as a brief concise story of the evolution of orthopedic surgery from earliest times to date More valuable still as primarily a time saving guide to the original sources of information " At this point it is tempting to discuss the difference, if any, between history (presumably living) and merely "dead history" If there is a difference, it is in the way the subject is handled by the historian. Most of us were brought up on 1066 and all that , a list of kings, scores of battles, maps of Western Europe, and then as we became more senior—of the whole world. An interminable string of facts—dead history, stone dead. Since those days G M Trevelyan's "History of England" has appeared, together with his other great works , no better examples could be given of *living* history The kings and the dates are still there, but submerged in the splendidly flowing narrative which explains how our nation grew and why at certain stages the people and their rulers did things that are unthinkable to day, and assigns to outstanding individuals their true place in the great story Such a book reads like a romance

Dr Bick's work, unfortunately, is very like the old fashioned history book. He has been at great pains to collect an astonishing amount of information, and to arrange it in an orderly fashion But he gives us facts almost from first to last and fails to trace clearly the many phases of the evolution of orthopædic surgery The chapters are arranged according to periods of time primitive man, middle ages, renaissance, and so on. The modern period is subdivided into physiology, pathology, and methods of practice The result is that the complete history of any particular condition or group of conditions has to be sought in several chapters Although there are people who object to calling an injury or disease an entity, yet there is no denying that a fracture sustained in the Ark during the storm must have been very like one occurring during an Atlantic crossing to day, and it would have been better, perhaps, to have given us a series of short self contained histories, each centred on a particular condition, and showing the gradual development of knowledge about its pathology and proper treatment

The author's preoccupation with detail makes the book difficult to read All the same we cannot but recommend it, for it is a storehouse of information, likely to be of great value to the intelligent student Dr Bick has done orthopædics a great service in producing this book but he has not done full justice either to the subject or to himself, and we hope that, if a second edition is called for, the book will be rearranged in a more digestible and more truly historical form

Sick Children Diagnosis and Treatment

A Manual for Students and Practitioners Second edition, revised By DONALD PATERSON, B.A Manitoba, M D Edin , F R C P Lond , Physician, The Hospital for Sick Children, Great Ormond street , Physician for Diseases of Children, Westminster Hospital. London Cassell and Co 1937 Pp 600 12*s* 6*d*

THE call for a second edition of this useful manual has been made the opportunity for a full revision of the section dealing with the anæmias and for amplication of that concerned with the diseases of the new born The problem of allocation of space is always a difficult one in a manual of this type, and has now been partly met by the use of small type for the less common conditions A number of tables and a particularly serviceable list of normal biochemical and other data, compiled by Dr W W Payne, have been added The fact that Dr Paterson's approach to the subject is essentially clinical will be appreciated by students doing their clerking and by busy practitioners Others may perhaps feel that therapeutics are dealt with a trifle uncritically, and that the references to the literature, provided in footnotes, hardly give sufficient prominence to pathology The book is, however, well proportioned, and for its size and price contains a great deal of reliable information For the most part this is clearly presented, and the many illustrations suitably selected and reproduced Some sixty pages are devoted to the index

Gabell's Prosthetic Dentistry

Second edition, revised and largely rewritten by ARTHUR G ALLEN, L D S R C S Eng, Dental Surgeon to the London Hospital, and Assistant Director of Dental Studies and Lecturer in Dental Prosthesis at the London Hospital Dental School London Humphrey Milford, Oxford University Press Pp 239 12*s* 6*d*

THERE is perhaps no branch of dentistry which can confer so much satisfaction or dissatisfaction on mankind as the construction and fitting of dentures Few of us who attain middle age escape these aids A sound knowledge of prosthetics is thus essential to the successful dentist He must know a certain amount of anatomy and physiology , he should be a bit of an engineer and something of a physicist and chemist, and above all a craftsman Because it is so practical a subject there is a tendency to decry text-books on prosthetics But without a sound knowledge of the underlying principles no amount of digital dexterity will bring a dentist success in this difficult branch of his art When this book first appeared, in 1921, it was at once acclaimed as a most original contribution to dental prosthetics Douglas Gabell was known as a stimulating teacher on a subject to which he had given a lifetime of study, and this book showed that as a writer he was equally gifted. His untimely death was a great loss to dentistry and no doubt accounted for the lapse of 15 years between the first and present editions In that time many changes and improvements have been effected in dental prosthesis yet the foundations laid by Gabell have remained practically unchanged Students and even practitioners could consult the original edition to-day with profit and the skill with which Mr Allen has accomplished his task of revision justifies his claim that the book still remains Gabell despite the extensive rewriting and remodelling The value of the book is that it is not only practical but also sets out and explains in detail the reasons for the various stages in making dentures It is indeed one of the best books of moderate size on the subject which we have seen It should be assured of a wide welcome with many further editions to keep green the memory of a great teacher

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Diseases of the Nose and Throat

Fourth edition By Sir STCLAIR THOMSON M.D F R C P F R C S Emeritus Professor of Laryngology in King's College Hospital; and V E NEGUS M.S F R C S Surgeon for Diseases of the Throat and Ear King's College Hospital. London Cassell and Co 1937 Pp 976. 45s

WE welcome a new edition of this outstanding text-book. In the ten years which have elapsed since its predecessor appeared laryngology has developed in various directions but the size of the book has been increased by only 33 pages a result obtained by rigid revision and by reducing the space formerly given to describing the technique of examination. In the production of this edition Sir StClair Thomson has had the collaboration of Mr V E Negus and, as would be expected endoscopic methods are now fully treated in a separate chapter The clinical features and diagnosis of laryngeal disease are fully explained and the sections on tuberculosis and cancer are outstanding The very varied methods of treating cancer of the larynx are thoroughly discussed the technique of the window method of applying radium is described but the names of Harmer and Finzi the pioneers in this work are not mentioned. A feature of the book is its references to almost every known method of treatment but one wishes that Sir StClair had used the great weight of his authority more often to indicate which method he himself prefers. Very many methods are thus given for the treatment of hay fever without indication of the authors preference numerous opinions on the efficacy or otherwise of active immunisation with pollen vaccine are quoted but the different methods of administration "leisurely and rush" treatments are not mentioned In the section on hæmorrhage after tonsillectomy the authors lay insufficient stress on the gravity of this complication they say that some observers incline to the view that active local measures (sponging packing stitching the pillars) are difficult and alarming and may even encourage bleeding without stating whether they agree with this opinion which many hold to be a dangerous one Suture of the pillars, according to the authors should be done over a tightly rolled pad of iodoform gauze; actually this is uncomfortable and soon becomes foul whereas simple suture is very efficacious. The book covers the ground very completely There is scarcely any condition symptom or method of treatment that is not mentioned therein, and the work will retain its place as a classical British text book.

Physiology in Health and Disease

Second edition By CARL J WIGGERS M.D Professor of Physiology in the School of Medicine of Western Reserve University Cleveland Ohio London Henry Kimpton 1937 Pp 1124 42s

THE author's statement that he has been continuously engaged in the task of revision since the appearance of the first edition is borne out by the remarkable improvements effected A work of this size can only achieve perfection by degrees; the defects in the first text have been resolutely tackled. Much of the book has been remoulded, and everywhere it has been brought up to date A large proportion of the references to original literature with which the text abounds, bear the date 1936 and these are not merely addenda the work to which they refer has been digested and appears as part of the tissue of the book The vigour of the revision as well as the decisive manner of the writing give a singular air of vitality to the book; indeed the English reader may find it at times a little overpowering It carries, as it were an overload of fuel in the shape of recent work, and is kept afloat by the sheer strength of its driving force and the skill of its pilot The reader would be well advised to pause occasionally and read at least some of the monographs and reviews which are generously quoted. In this way he will appreciate the full significance of many of the paragraphs and avoid an overdose of facts with but a superficial grasp of the principles involved Read in this way the book will be invaluable to teachers and advanced students as a key to physiological literature while those engaged in clinical work will find the sections on applied physiology much to the point and easy to follow Every text-book has a bias and the experienced seeker after knowledge arranges his reading accordingly The bias in this case is biophysical, and the principles of electrocardiography and other bio-electric phenomena, which often puzzle the beginner are clearly expounded Much of Prof Wiggers's personal work has had to do with the circulation of the blood particularly its physical aspects, and the chapters dealing with this subject are outstanding The book as a whole makes a definite contribution to the understanding of physiology Probably its most important characteristic is that it not only teaches but provides the means of learning and yields more the more it is studied

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The Control of Bovine Tuberculosis in Man

By NATHAN RAW C.M G M.D M R.C.P late British Member of the International Committee on Tuberculosis. London: Baillière Tindall and Cox. 1937 Pp. 128 6s

THIS short monograph is based upon Dr Raw's own hospital and laboratory experience in the last 30 years. This he states in the preface 'comprises the care and treatment of over 7000 cases of pulmonary tuberculosis and of 2200 cases of non pulmonary tuberculosis.' He regards tuberculous infection as so widespread and so serious in certain groups that it is almost impossible to visualise its control and its extinction except by vaccination of susceptible persons and animals. Although he accepts the general view that the human and bovine strains of tubercle bacilli are separate and distinct he believes that the bovine strain introduced into the human body in infancy or early childhood may after many years growth in its new tissues, undergo mutation and become a human strain producing the usual lesions attributable to this strain Dr Raw acknowledges, however, that he has had no opportunity of proving his theory, though he quotes some evidence in support of it Moreover he is quite satisfied that the human, bovine, and avian strains when subcultured continuously for many years do not change their cultural characteristics The immunising vaccine which he advocates is prepared from human strain cultures attenuated by subculture for 32 years without any intermission until now they are avirulent and non-pathogenic, unlike B C G they are killed by heat before use as a vaccine This vaccine together with the control of milk by pasteurisation are the principal weapons in the author's armamentarium for eradicating bovine tuberculosis in man. Unfortunately the book is rather scrappy and there is much repetition, not always with accuracy The story of Koch at the International Conference at Washington is interesting, as indeed must be all personal details of Koch to the present generation, most of whom did not know him, but it is a pity to tell the story three times in different parts of the book. Again, Dr Raw appears to believe (vide p 1) that all tuberculosis of glands, bones, and joints and lupus is of bovine origin, which is surely a fallacy The book is not free from such inaccuracies, but it is interesting as the expression of the point of view of an experienced worker in tuberculosis

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EXAMINING BOARDS IN MEDICAL SPECIALTIES

(FROM A CORRESPONDENT IN THE UNITED STATES)

To ensure that those physicians who claim to be specialists shall in fact be qualified to do so the council on medical education and hospitals of the American Medical Association has been authorised to express approval of certain examining boards in medical specialties The essentials for approved examining boards have been defined and include the requisites that the boards should be composed of representatives of national organisations of the specialty, should be incorporated, should determine whether candidates have received adequate preparation, should provide comprehensive tests of their ability and fitness, and should certify the competence of those who satisfy the requirements Twelve branches of medicine have been recognised as suitable fields for the certification of specialists internal medicine, surgery, pædiatrics, obstetrics and gynæcology, ophthalmology, otolaryngology, dermatology and syphilology, neurology and psychiatry, urology, orthopædic surgery, radiology, and pathology Each applicant for admission to the examination is required to present evidence that he has met standards in the way of general qualifications, professional education, and special training

DERMATOLOGY AND SYPHILOLOGY

The first board to be accepted by the council was the American Board of Dermatology and Syphilology The purposes of this body have been defined as primarily to determine the competence of physicians who specialise in dermatology and syphilology, secondly, to publish lists of physicians who have been certified by the board, for the information of hospitals, medical schools, other physicians, and the lay public, and thirdly, to improve the standards of practice of dermatology and syphilology by investigation of medical school curriculums and by investigation and encouragement of adequate facilities for graduate instruction in this specialty Two classes of applicants are recognised, the first consisting of physicians who have limited their practice mainly to dermatology or syphilology for ten or more years including a period of training satisfactory to the board, while the second comprises those who have practised dermatology and syphilology at least five years, including their period of training The latter group must have had at least two full years of special training devoted exclusively to this specialty, including at least one year in a well recognised clinic or as an assistant in the private practice of a well known specialist in this field Applicants classed in the second group are required to pass a written examination on clinical and laboratory subjects, including cutaneous pathology, which are held simultaneously at stated intervals in different parts of the country approximately two months before the oral examination Applicants in both groups are required to pass an oral, a clinical, and a laboratory examination which are conducted in a clinic or hospital ward where individual cases are discussed with each candidate Under certain circumstances the certificate may be revoked by the board

Similar requirements have been formulated for the other boards so far organised, though some specialties allow a wider latitude in qualifications and examination than others Boards have been organised in all of the specialties mentioned as suitable by the council on medical education, ten have been already accepted by the council, and the other two probably will be as soon as they have met certain specific requirements

CRITICISMS OF BOARDS

These boards have not been organised, however, without some objections by qualified men Thus Dr Bucy, who is secretary of the section on neurology, has made the criticism that their requirements tend to cast medical practice and medical research into too rigid moulds He feels also that the certification, as so far developed, lays far too little emphasis on the applicant's possible research and too much on his factual knowledge These criticisms have been answered by Dr Heyd, the retiring president of the American Medical Association, and by Dr Titus, who is secretary of the Advisory Board of the Medical Specialists and secretary of the Board on Obstetrics and Gynecology Titus holds that the public has suffered too long from too many self-styled specialists and said that the boards are merely trying to make available the facts regarding those who claim to be qualified for specialised practice Furthermore, he states that certain boards do not require a rigid limitation of work to their specialty, multiple certification may be occasionally granted, and the Board of Internal Medicine, for example, offers several routes by which applicants can be considered qualified for certification Dr Boggs, in the presidential address read before the Association of American Physicians, also challenged the underlying philosophy of such certification and stated that since the training of the qualified internist may be obtained in a variety of ways it is desirable, and in the public interest, that individuality should be encouraged rather than reduced to one specific character

It seems probable, in spite of these criticisms, that the organisation and functioning of the special boards will continue. But there may be some modification of their administration

THE LANCET

LONDON SATURDAY JULY 24 1937

ANOMALIES OF HEALTH INSURANCE

FROM the report summarised on p 222 it is clear that after twenty five years' work under varying conditions of peace war and economic depression our national system of health insurance is still in a strong financial position The report also however lays bare some of the defects of the system when regarded as a means of improving the health of the people—the object for which it was created The aggregate surplus of funds is large but it is by no means uniformly spread among the 7000 financial units (approved societies and branches) that administer the cash benefits There are wide variations indeed even among the main groups in which the societies are classified Thus in the societies insuring men only the average surplus per member varies from £4 65 in the employers provident funds and £3 92 in the trade unions to £1 96 in the industrial assurance and collecting societies Moreover 520 societies and branches showed no surplus at all 292 of these had a deficiency which in 81 cases was on average no less than £1 39 per member The variations between the societies become more apparent when attention is directed to the part of the surplus certified by the valuer as disposable—i.e available for the provision of additional benefits The amount so certified was £20 105 033 or 54 per cent of the total surplus the remainder being carried forward But there were 578 societies with a surplus no part of which could be certified as disposable and when the members of these societies are added to those with no surplus at all the number of insured persons who are members of societies that are unable to give additional benefits is found to be 2,219 525 comprising 22 per cent of the insured men and 25 per cent of the insured women These persons are at a serious disadvantage compared with members of the societies that give additional benefits for the benefits are substantial

The failure of so many societies to show a disposable surplus has various causes the most prominent of which are shortage of contributions and heavy claims for sickness and disablement benefits To some extent these causes reflect differences in the occupations of insured persons Contribution income is dependent on unemployment and unemployment with consequent shortage of contributions has been more prevalent in some occupations than in others Again, some occupations are more unhealthy than others and the differences are reflected in heavier claims for sickness and disablement benefits The insured persons therefore who are least likely to receive additional benefits are those belonging to societies whose members are largely employed in occupations with a high incidence of sickness and of unemployment It may well be asked whether there is any justification for continuing an administrative system that produces such inequalities There is no corresponding variation of contribution the contribution varies with sex but not otherwise Insured persons have free choice of society, and it is said that they should be more careful to choose societies that give handsome additional benefits But most insured persons enter into insurance at 16 years of age and it is not easy to see how they are to obtain the information necessary to assess the relative advantage of the approved societies open to them (How many doctors make a careful comparison of insurance office prospectuses before taking out a whole life or endowment policy ?) It has been contended that equality of benefit should follow equality of contribution, and that to secure this advantage, among others the approved society system should give place to the direct administration of the cash benefit side of health insurance by the State, which already administers pensions insurance, with which health insurance is closely connected. It has also been contended that the ' treatment additional benefits of which dental and ophthalmic benefits are the most important are so closely allied to medical benefit that they should be administered by the body administering that benefit and as part of a unified system of medical and ancillary services

To-day the approved society is very far from being what was intended In the original draft of the health insurance scheme it figured as a new local health organisation administering like the German Krankenkassen, the medical service of the insured as well as the cash benefits and destined to apply an effective stimulus to backward public health authorities and to provide a new example of democratic self-government But the draft scheme had scarcely emerged into the light of day when at the insistence of the British Medical Association the administration of medical benefit was transferred from the approved society to a new body the insurance committee created for the purpose and the societies have done nothing to stimulate public health progress or to provide an object-lesson in democracy There are indeed few systems of government less democratic none more exclusively bureaucratic than that of a large approved society It is true that the Royal Commission on National Health Insurance reporting in 1926 recommended the continuance of approved society administration but that was eleven years ago and things have since happened that have had an important influence upon the whole position of the health insurance system as one of the country's defences against disease and premature death. There has been a quickening of public interest in health progress, which has found expression in the Local Government Act of 1929 and in a growing concern over the continuance of high maternal mortality one result of which was the Midwives Act of last year These developments are bringing about a rapid increase in the medical and ancillary work carried out by the local health authorities and it becomes more and more difficult to justify the continuance in the same local area of two entirely distinct and uncoördinated medical services, one under the health authority and the other under the insurance committee. There is a stronger case now than there was eleven years ago for the Royal Commission's recommendation that the insurance committees should be abolished and their functions transferred to the local health authorities.

Within the insurance system developments are on foot. Medical benefit is to be extended to boys and girls between school-leaving age and 16 years, and there is talk of extensions of medical benefit to the dependants of the insured. There are those, however, who hold that before the quantity of work required from the insurance medical service is increased its quality should be improved—for instance, by supplementing the work of general practitioners with that of colleagues possessing special skill and experience, as recommended eleven years ago by the Royal Commission. We are spending large sums on our insurance system, and it is doubtful whether we are getting all the value we could for our money. A thorough overhaul is needed, and a scrapping of machinery found unsuited to modern requirements.

EARLY TUBERCULOSIS

ELSEWHERE in this issue Dr JAMES MAXWELL records the nature and duration of the symptoms of pulmonary tuberculosis, before a diagnosis was made, in 340 patients attending his clinic at the Royal Chest Hospital. At the same time he asks whether the opinion, which he quotes, that pulmonary tuberculosis during a considerable period of its course is a symptomless disease can be accepted as a valid reason for the failure to recognise it in its earliest stages. In other words, is the disease itself to blame or is the doctor or the patient himself responsible for the failure?

It is possible that, put in this way, these three questions bear upon different phases of the disease. The body's reaction to the tubercle bacillus is not an event of dramatic swiftness like the reaction to the *Streptococcus pyogenes*. It is usually gradual—the result of daily infections with small doses of tubercle bacilli in an infective environment for a longish time. There is presumably a preliminary silent period, therefore, during which—to use the phraseology of the modern allergy school—the patient is passing from the phase of negative to positive Mantoux reaction, as in the case of the hospital nurses exposed to infection recorded by HEIMBECK and others. Perhaps it is begging the question to call this prodromal period altogether silent and symptomless, but for the moment it appears to be so, and it is common knowledge that healed tuberculosis may be encountered in persons who have no history of illness. Further investigation of this prodromal stage is needed. After it comes a period of early symptoms, and it is evident from Dr Maxwell's classified Table that this state of affairs is allowed by patient or doctor to go on unrecognised for a considerable time—more than three months in 219 out 340 of Dr Maxwell's patients—before the patient reaches the specialist clinic. Due allowance must of course be made for the patient's being wise after the event and remembering vague symptoms whose significance altered immediately he took the serious step of going to hospital, but when a generous margin is allowed for the vagaries of memory—and the hospital class of patient is really extraordinary in this respect, even with such important happenings as hæmoptysis—the period during which the symptoms of the disease remain unattended to is altogether far too long. The fault cannot be laid at any one door. On the doctor's side he who waits for stethoscopic signs waits too long, but the opportunities for radiological and other specialised means of examination are still inadequate, even in the tuberculosis dispensaries, in some of the rural districts of this country. These and other cognate problems were emphasised at the recent conference of the National Association for the Prevention of Tuberculosis held at Bristol and reported in our columns last week.

On the patient's side, next to lack of money, the psychological difficulties are perhaps the greatest. The over-anxious person attends hospital or dispensary readily and his fears are often groundless, but the healthy minded young adult whose life is full of interests and new duties is naturally prone to neglect trivial ailments and to take a quiet pride in maintaining a fearless attitude to life. It would be a tragedy for this country were it otherwise. The best way out at the moment seems to be that of the group survey in which X ray examination forms an integral part. This method was dealt with at some length by Dr D'ARCY HART in his Milroy lectures this year.[1] When all the members of a small community working or living in daily contact are examined as a routine there is no undue prominence for the individual and the examination becomes part of the common life and experience of all.

A NEW REMEDY FOR DIABETIC KETOSIS

Prof SZENT-GYÖRGYI's record as an investigator ensures immediate attention for his latest and most exciting observations. These were described by our Budapest correspondent last week and a full account of them has appeared in Germany.[2] In brief, an idea springing from his studies of tissue metabolism led him to try the effect of succinic acid as a remedy for the ketosis of diabetes. Only five patients have so far been treated, but in one of these it was found that as little as 1 0 gramme daily by mouth would remove ketosis, the acetone bodies *disappearing completely* from the urine and the alkali reserve rising. In one of these cases the patient had suffered from diabetes for several years and had been kept free from ketonuria and glycosuria by a carefully controlled diet and 70 units of insulin daily. But even this treatment had failed in the long run, and just before her treatment with succinic acid her symptoms were severe, with a blood sugar of 352 mg per 100 c cm, and an alkali reserve of 25 vols per cent. KORÁNYI and SZENT GYÖRGYI discontinued the insulin injections, and gave instead 10 g of succinic acid per day orally. By the fourth day, though the concentration of sugar in the urine was unaltered acetone bodies had disappeared from the urine and later the alkali reserve was found to have risen sharply. That this remarkable result was not merely fortuitous was shown on two occasions by return of ketosis when use of the acid was stopped for a few days. Finally it proved possible to reduce the dose of succinic acid to 1·0 g per day and at the same time the urine could be kept sugar free by the simultaneous administration of 10 units of insulin daily—in contrast to the 70 units previously given. Though this was the most striking of the five cases the others also yielded evidence of the antiketogenic effect of the acid. In announcing these results at an early stage KORÁNYI and SZENT GYÖRGYI wish the possibilities of their method to be explored by others. From their brief experience they suggest that the treatment of a new patient should begin with a daily dose of 10 g of succinic acid that this dosage should be maintained until 1–2 days after disappearance of the acetonuria and that it should then be gradually reduced. The acid is given after meals as a 2 per cent solution in tap water the total dose being divided throughout the day. Unfortunately it is apt to produce severe nausea, and causes distress especially to patients with hyperacidity so that experiments are now being made with its administration in capsules or as the calcium salt in powder form.

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[1] *Lancet* 1937 1 969 1033 1093, 1117

[2] Korányi A and Szent Györgyi A v *Dtsch med Wschr*. July 2nd 1937, p 1029

SZENT GYÖRGYI provides an explanation of these findings in terms of tissue metabolism. During the last few years he has developed a theory that the respiration of tissues is catalysed by certain C_4-dicarboxylic acids, of which succinic acid is one. He now claims that in particular the oxidation of pyruvic acid an intermediary substance in the metabolism of carbohydrates is catalysed by these C_4 acids. He further states that if for any reason this catalysis fails the pyruvic acid is not oxidised but is instead converted into acetone bodies. (That such a conversion can occur has indeed been known for many years.) He therefore suggests that the ketosis of diabetes is due to failure of the C_4 acids to catalyse the oxidation of pyruvic acid, this failure probably being due to a shortage of C_4-dicarboxylic acids in diabetes either because their formation is inhibited or because their destruction is accelerated. Administration of small amounts of a C_4-acid such as succinic acid might thus it is argued restore catalysis of the pyruvic acid oxidation and so stop the formation of acetone bodies. Whether this argument will prove acceptable cannot be decided before publication of the evidence on which it rests. From the clinical standpoint however it is clear that if others have the same experiences as KORÁNYI and SZENT GYÖRGYI a substantial advance will have been made in improving the lot of the diabetic. Succinic acid is cheap and the advantage of its being given by mouth needs no emphasis. If the dose of insulin can be reduced when succinic acid is given at the same time a great saving will be effected, and the use of one of the new combinations of insulin with a prolonged action might mean that the dosage could be kept at a very low level indeed.

REFLECTIONS ON THE MARRIAGE BILL

IN parliamentary debate the most diverse ideas of individuals, and the deliberate conclusions of our courts of justice and Royal Commissions, are brought to a focus, without prearrangement, upon topics of the day. An excellent instance of this is to be found in the last few weeks deliberations on the Marriage Bill, which show the interplay of the forces—both of reason and prejudice—that mould the structure of our social life. The mental discipline and the experience of the three great professions of the Law, the Church, and Medicine are seen in the closest comparison. The first concern of the judges is that the new law shall disturb existing law as little as possible (or the courts will be choked with bewildered litigants), the first concern of the Church is that it shall not disturb the ideals on which old custom is in certain measure based. the aim of the doctors ably put forward in Lord DAWSON's speeches, is to make it reflect current scientific knowledge. No subject reveals such tendencies so clearly as that of sex, and no question of sex so clearly as that of marriage. Here one might say the lawyer has to provide for people in their most egoistic and aggressive moments the Church tries to keep them to their most hopeful moments while the doctor has to relieve them of the consequences—on the one hand of their anxieties and guilt due to egoism and aggression, and on the other hand of their disappointment due to the failure of their hopes.

Legislation for the sexual impulse is not easy. In no field of human activity are our most experienced counsellors so ill informed and in no other do men who pride themselves on being practical fall back so quickly on theory. In the Bill now under discussion the most important aspect of sexual life—namely marriage—is to be the subject of further legislation. But there are other aspects of the sexual life both normal and abnormal and it is not scientifically sound that any aspect should be debated, and regarded as an isolated phenomenon. The causes of sexual maladjustment are numerous. Even the condition of sexual maturity is complex, and if the mental as well as the physical aspects are taken into consideration it is found to be of slow development. Not a few suffering mortals only partially or temporarily achieve a semblance of maturity and some of these, made bold by hope launch into a marriage for which they are not fitted. The medical opinion put forward by Lord DAWSON in the Upper House that in the case of those with abnormality of sexual development the grounds for divorce should be extended, was rejected by learned men who have no day-to-day responsibility as doctors have for dealing with the effects of marital suffering. In legislative debate it seems to be assumed too that the sexual life is fully known and fully conscious, and that its manifestations can be defined as clearly as the clauses of a contract, and, further, that the easiest and clearest of all contracts is the promise to love, honour, and obey. The sanctity of marriage, however, depends not on a promise but on the maintenance of an attitude of mind. Psychopathologists tell us that even when a marriage is unhappy there is by no means always, as one might expect, an immediate impulse to run to divorce. The bonds that tie the man and woman together lie deeper in the mind than those of conscious affection or conscious antagonism, and the wish to make the association a working arrangement exists independently of the forces of social convention or religious sanction: it is a part of the sexual impulse. They tell us that deep in his mind man is more moral than he himself realises, and that the strongest restrictions upon sexual desires arise within and act unseen.

To-day our legislators are in the difficulty that they have to satisfy the reasonable requirements of those who wish to keep people to their contracts and the understandable wishes of those who dread any change in the idealised status of marriage. The former are represented in the Law, the latter in the Church. The medical profession, as a profession, is not involved in this controversy. It is the expert witness; it should supply the scientific knowledge. We are in fact in a privileged position in respect to social legislation. We are not called on to adjust humanity, as are the other two branches of learning, to legislative expediency or to any particular interpretation of God. Our task is to discover and disclose the laws of man's inner nature, confident that when these are known he will have a sure guide, and happy in the thought that as they become better known he is discovering that there is less to fear.

ANNOTATIONS

ERGOMETRINE OR ERGONOVINE?

In taking it upon themselves to rename the recently discovered alkaloid from ergot, the council of pharmacy and chemistry of the American Medical Association have set, it would appear, a dangerous precedent. It emerges from correspondence now published[1] that as a corresponding member of the council Sir Henry Dale, F.R.S., received regularly, for his confidential information, the typewritten bulletin of their discussions and decisions. In one of these, dated Feb. 26th, 1936, he observed that notice had been given of the question of whether the council should adopt a non-proprietary name for the new ergot alkaloid. Sir Henry at once wrote protesting against the addition of yet another name to the four (ergometrine, ergotocin, ergobasine, and ergostetrine) which had already been adopted by various claimants of the right to name what all admit is the same alkaloid. He urged that these claimants should be consulted before a decision was made; but later he learned that the action he had deprecated in advance had actually been taken long before his letter could have reached the council. Further correspondence passed between the council and Sir Henry, who, owing to his strong disapproval of their interpretation of their authority, has resigned from the position of corresponding member.

It has always been considered the rightful prerogative of the discoverer to give a newly discovered animal, plant, preparation, or apparatus its scientific name. This is more than a mere point of just reward, for it has been found from century-old experience to be the best way of avoiding endless controversy and confusion. In systems of scientific nomenclature there have necessarily been rigid conventions; but these, like the principles of common law, have been such that not only interested parties but also the scientific public accept them, without question, as consonant with reason and justice. It is a different matter when a body like the council on pharmacy and chemistry, who though highly influential are hardly to be considered a "scientific body" in the strict sense, undertake to rename a drug without reference to the various workers who are claimants of the discovery. Had the council presented convincing reasons for their choice their solution would probably have been accepted without demur. But to substitute the new name Ergonovine for Ergometrine on what appear to be the sole grounds that the latter offends against their regulations by being "therapeutically suggestive" is to get ludicrously tied up in their own red tape.

The council were undoubtedly guilty of a breach of courtesy to Sir Henry Dale. Sir Henry was one of their corresponding members. He was presumably coöpted to that office to assist, among other things, in avoiding international muddling. He is unrivalled in his knowledge of the pharmacology of ergot and has contributed more to the question of the alkaloids of ergot than any other living pharmacologist. He was moreover in particularly close relationship with the British workers Dudley and Moir, who had given the new alkaloid its name Ergometrine. If ever the council were going to seek the advice of their corresponding member they might have been expected to do so on this occasion. We are now however faced with a "fait accompli" and it seems inevitable, since the council have given no good reasons to the contrary, that in England, and probably extensively in other parts of the world, the new drug will continue to be called Ergometrine. The duplication of names in the English-speaking world is regrettable, but the incident may have good consequences if it is made the occasion for a better understanding in the future. The ideal of scientific nomenclature is that it should be international and world-wide currency. In the present unhappy state of world affairs this may seem an impossible ideal, but it has already worked in other branches of science, less affected, it is true, by commercialism than pharmacology. The League of Nations might provide a mechanism for dealing with such things and, in solving successfully such small-scale problems, do something to compensate for its temporary inertness in larger matters. Or, if it is impracticable for the League to undertake such coördination, surely it should at least be possible to obtain Anglo-American agreement. It will be nothing less than farcical if, in addition to the inevitable crop of trade names which will spring up around a new alkaloid, England, the United States, and perhaps other countries enter the lists with different scientific names.

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[1] See *J. Amer. med. Ass.* June 5th, 1937, p. 1909.

AUSTRALIAN LEPTOSPIROSES

ANY information that helps to elucidate the undifferentiated short-period fevers is welcome and it is useful to know that Clayton and Derrick[1] in South Queensland have isolated a leptospira with definite serological characteristics from a case of seven-day fever—an illness fairly common in the locality. Subdivision of the genus leptospira by serological characteristics has sometimes been criticised adversely, but in this particular instance a thorough understanding of the serology of the organism is essential for the diagnosis. The work of William Fletcher in the Malay States and of Brown and Taylor and Goyle on epidemic jaundice in the Andaman Islands is sufficient evidence of the value of this serological typing, for although Fletcher observed overlapping of the various antigens he states that a serum for *L. icterohæmorrhagiæ* would have been of use only in a minority of cases. Clayton and Derrick show that the leptospira they isolated from a case of seven-day fever is serologically distinct from the types isolated by Lumley in North Queensland, but is closely related to two Sumatra types. Lumley[2] has further added to our knowledge by isolating two serological types which he designates Australis A and Australis B; the former he finds unrelated to any leptospira foreign to Australia, whereas the latter is distantly related to *L. icterohæmorrhagiæ* and to *L. canicola*. He justly remarks that the problems associated with the occurrence of leptospira infections in man are very complex and numerous.

THE HOSPITAL PATIENT AT HOME

IN the United States organised social service is more and more regarded as a necessary part of hospital work. The movement began thirty years ago at the Massachusetts General Hospital, Boston, on the initiative of Dr. Richard C. Cabot, and many of the larger American hospitals now have very active social service departments. In the Presbyterian Hospital, New York, for example, there is a staff of thirty workers, most of whom are graduates of schools of social service, and after twelve years as their director Miss Thornton is able to give an instructive account of the work being done.[3] It may be asked whether from a purely medical point of view there is a real need for hospital social service and whether the cost of a special department can be justified by the probable results. These questions Miss Thornton answers conclusively in the affirmative. Based on a detailed analysis of 100 cases, her book illustrates the variety of social factors that may seriously hinder recovery from illness and the methods employed by the social workers, in collaboration with the medical staff, to remove or mitigate them. As might be expected, the recurrent and chronic cases are the ones in which the social factors are relatively more important and in which the social service department can achieve its most striking successes, and to those unacquainted with this development of hospital activities the book will come as a revelation of what can be done by experts to help the doctor to restore his patients to health and working capacity. The measures used in dealing with the social factors are described under two heads: those designed to change and control the patient's physical and social environment, and those designed to influence his conduct; but in practice there is no clear distinction between the two groups. The remarkable variety of the measures in each group that can be employed in treatment is brought out by detailed histories of cases treated. It has been said that hospital practice tends to lead students to regard a patient as a mere carrier of more or less interesting pathological phenomena and not as a fellow being who has to live and work under particular conditions; and the hospital doctor has not the advantages enjoyed by the general practitioner of seeing something of the patient's home life and the stresses under which he carries it on. Miss Thornton's useful and important book may therefore prove corrective as well as informative.

CHEMICAL PROPHYLAXIS FOR POLIOMYELITIS

THE causal agent of poliomyelitis is a filtrable virus. It is highly neurotropic, and experiments on monkeys have shown that it gains access to the central nervous system through the olfactory area of the nose, either through the olfactory cells which lie quite superficially in the mucosa or by way of the perineural spaces of the olfactory nerves. This probably explains the disappointing results of using immune serum to prevent infection, for the virus does not have to come in contact with the serum in its passage to the brain.

In 1935 three groups of workers in the United States began to experiment with the application of chemicals to the olfactory mucosa in the hope of diminishing its permeability to the virus. Armstrong and Harrison[1] used alum and later picric acid; Sabin, Olitsky, and Cox[2] tried tannic acid; while Schultz and Gebhardt[3] have experimented with some 40 chemicals and concluded that zinc sulphate is especially deserving of a trial in man. A description of the latter's work has lately appeared[4] and is accompanied by a useful account of the technique by Peet, Echols, and Richter.[5] Schultz and Gebhardt find that all, or nearly all, of a large number of monkeys treated by spraying the nose with a 1 per cent. solution of zinc sulphate on two or three successive days were protected against the administration intranasally a month later of a virus which infected 90 per cent. of controls, and many of their treated animals have survived repeated instillations of virus for two and even three months after the spraying. Thus a zinc sulphate solution appears to be effective for a considerable time and is certainly less likely to cause damage to the nasal mucous membrane than some other chemicals which have been tried; indeed a 2 per cent. solution is commonly used in the ionisation treatment of hay fever without, according to many authorities, causing any permanent damage. The technique of its application is, however, of great importance. Peet and his colleagues found that, in ordinary spraying of the nose, the solution does not reach above the middle turbinal to the olfactory region, which is more difficult of access in men than in monkeys. It must be applied by means of a fine long nozzle passed under inspection between the middle turbinal and the septum. When it does reach the olfactory area, the solution causes pain, coryza, and usually severe headache; the sense of smell is also lost, but is said always to return to normal in a few weeks. A solution is therefore recommended of 1 per cent. zinc sulphate, 0.5 per cent. sodium chloride, and 1 per cent. of a proprietary local anæsthetic, called Pontocaine, which is nearly isotonic, and does not cause pain. If the nasal passage is found to be occluded, the mucosa should first be shrunken by the application of ephedrine or Benzedrine Inhalant. One cubic centimetre of the solution is delivered into each nostril on three consecutive days, and the application is repeated once a fortnight as long as the risk of infection is great. The method has been proved to afford a high degree of protection in monkeys, and there is definite hope that it can similarly protect human beings, but this can only be determined by extensive trial in the presence of an epidemic. In the present state of our knowledge it seems to offer a child the best chance of protection against infantile paralysis.

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[1] Clayton, G. E. B., and Derrick, E. H., *Med. J. Austral.* May 1st, 1937, p. 647.

[2] Lumley, G. F., *Ibid.*, p. 654.

[3] The Social Component in Medical Care. By Janet Thornton, Director, Social Service Department, Presbyterian Hospital, New York, in collaboration with Dr. Marjorie Strauss Knauth, Assistant Physician to the Hospital. New York: Columbia University Press. London: Humphrey Milford, Oxford University Press. 1937. Pp. 411. 15s.

[1] Armstrong, C., and Harrison, W. T., *Publ. Hlth Rep., Wash.* 1935, 50, 725; 1936, 51, 203 and 1105; see *Lancet*, 1936, 2, 933.

[2] Sabin, A. B., Olitsky, P. K., and Cox, H. R., *J. exp. Med.* 1936, 63, 877.

[3] Schultz, E. W., and Gebhardt, L. P., *Proc. Soc. exp. Biol., N.Y.* 1935, 30, 1010, and 1936, 34, 133.

[4] Schultz, E. W., and Gebhardt, L. P., *J. Amer. med. Ass.* June 5th, 1937, p. 2182.

[5] Peet, M. M., Echols, D. H., and Richter, H. J., *Ibid.* June 5th, 1937, p. 2184.

NOTIFICATION OF THE VENEREAL DISEASES

THE war that the United States Public Health Service, supported by many distinguished medical authorities, is waging against venereal infections will be watched with the greatest interest in this country. Our own problem seems to be less acute but is serious enough to warrant the closest attention to all the experiments in control that are proceeding elsewhere. On Feb. 20th we referred to the Conference on Venereal Diseases Control held in Washington, D.C., last December. The full report[1] of its proceedings has now been published and contains much interesting material. The notification of cases of syphilis was said to be incomplete and unsatisfactory in all sections of the country, and the opinion was expressed that this lack of coöperation on the part of physicians was partly due to a fear that records might not be handled confidentially. Notwithstanding this attitude, the advantage of reporting the names and addresses of the patients instead of using initials or identifying numbers was urged; but a number of speakers made strenuous protest, and finally it was agreed that physicians who raised objections to the use of their patients' names and addresses could usefully report their cases by giving initials, dates of birth, or some symbols whereby one case could be distinguished from another. It was agreed that infectious venereal disease patients who lapsed from treatment should be reported by names and addresses.

In a leading article on Jan. 2nd we drew attention to the view of some impartial observers that the greater success in the control of syphilis achieved in the Scandinavian countries, as compared with Great Britain, might be due to the absence here of legislation compelling notification and giving power to enforce treatment. In a subsequent issue,[2] however, it was suggested that some of the information collected by these observers had been erroneously interpreted; and it seems clear that there is no reliable basis of comparison between the available figures of the incidence in this country and the incidence in countries where notification is compulsory and is generally and conscientiously performed. The case for notification of the venereal diseases is by no means so clear-cut as the case for notification of other transmissible diseases. But a system of notification that was faithfully supported by the medical profession would provide valuable information about general and local incidence and make it possible to give an accurate estimate of general and local needs. If to this information were added power to compel the recalcitrant and to enforce temporary segregation, the public health authorities would be provided with powerful weapons for the protection of the community. Wisely used, these should in no way modify the spirit of coöperation shown by most infected patients; but it cannot be denied that notification and compulsion might in certain circumstances endanger the traditional confidential relationship between patient and physician. The fear is, too, that a proportion of the infected might be impelled to conceal their condition and refrain from seeking medical aid.

The decision of the Minister of Health to send medical and administrative representatives to study the situation in the Scandinavian countries is therefore of particular importance. The group, which has already set out, consists of Colonel L. W. Harrison, Mr D. C. L. Ward, and Mrs Margaret Rorke, who will be joined later by Dr. Thomas Ferguson of the Scottish Health Department, and their report will be awaited with interest. If these observers form the same impressions as the commission from New York City and State, the case for notification, and compulsion where necessary, will receive additional support in this country. If, in time, it should be considered desirable to adopt some method of notification whereby individual patients could be distinguished but not identified, it seems probable that the large majority of practitioners would willingly coöperate, since the question of abandoning secrecy would arise *only* in the event of default by an infectious patient.

POPULARISING THE HEALTH SERVICES

"I have come to the conclusion," said Sir Kingsley Wood in the House of Commons on June 8th, "that, although we have perhaps the finest social services in the world, they are by no means fully utilised." Only half of the expectant mothers, he said, had been brought within the scope of the antenatal service, there were still areas where the majority of parents did not take advantage of the maternity and child welfare centres, and, with regard to tuberculosis, there was still a large proportion of patients who only came under the purview of the service when the disease was too advanced to make recovery possible. Such is the state of affairs which Sir Kingsley hopes to remedy by a six month "Use your Health Services" campaign this winter. If it is to be successful, his propaganda will have to overcome not only ignorance of the available services but a fairly widespread prejudice against them. Many have still but the vaguest knowledge of what services are provided for them, or they think that clinics are only for the very poor and not quite respectable, or they feel that the services cannot be really free, and that some payment will ultimately be demanded. Preventive medicine is too new a conception to be instinctively and universally accepted. Many still adhere to the Biblical "They that are whole have no need of a physician," and consider that taking a healthy child to a clinic is mere fussiness. With others there is still confusion with the services under the old Poor Law which were looked upon with extreme disfavour. Some fear the impersonal and rather inhuman atmosphere of a clinic and feel that nothing that is free can be really efficient Even the general medical practitioner does not always take an unprejudiced view of clinics he tends to believe that people attend free clinics when they would otherwise come to him for treatment that a patient referred to a clinic is often his patient no longer that the diagnoses returned by tuberculosis dispensaries are almost invariably positive and that a remark dropped by a hurried medical officer at a clinic is apt to be accepted, whereas his own considered advice is ignored He is mostly—but not always—wrong in these beliefs.

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[1] U.S. Public Health Service. Supplement No. 3 to Venereal Diseases Information. 1937. Obtainable from the Superintendent of Documents, Washington, D.C. Pp. 154. 15 cents.

[2] *Lancet* 1937, 1, 425.

Starting with an inaugural speech by Mr Neville Chamberlain in October the Minister announced in his opening address to the Health Congress of the Royal Sanitary Institute last week his intention to use all the available branches of modern propaganda to help him in his campaign His aim will be to interest the public in the campaign itself so that people will look out for the posters, films, and so on in their area and so that the health services will become a new and topical subject In the press there are to be no paid advertisements but every attempt is to be made to induce editors to include the workings of the campaign in their news columns Adequate press advertising according to Mr P S Rankine the secretary of the Central Council for Health Education, which has been associated with the Ministry of Health in arranging the details of the campaign, would cost £83 000 a year; and in his view expressed at the recent conference of the National Association for the Prevention of Tuberculosis, its results would very probably be unsatisfactory Advertisements are connected in the public mind with attempts to sell something and the remarks made in the advertisement columns do not carry the same weight as do news items approved by the editor It is felt that more can be attained by the contribution of authoritative articles to national and local papers by the giving of interviews to the press and by careful replies to criticisms appearing in the correspondence columns

A large number of films dealing with health subjects is already available to film proprietors but they have been chary up to the present of imposing what they feel may be unwelcome propaganda upon their patrons. The officially prepared film The Health of the Nation is however to be shown in nearly a thousand cinemas this summer and it is hoped that special programmes of health films will be arranged at suitable hours for children mothers, and the general public. In addition an attempt is to be made by films and addresses, to reach what advertisers call "existing audiences at Women's Institutes meetings of the British Legion church and chapel organisations and so forth which together include some 16,000 000 people The B B C who can spare but little time for any campaign however deserving will broadcast talks and local meetings will be arranged for collective listening preceded by suitable publicity Health exhibitions, which reach a public which avoids lectures and film displays will be arranged in connexion with local "Health Weeks with special sermons addresses at factories and clubs, and health talks in schools Finally printed matter—posters, leaflets, display cards and notices on buses—will act as a constant reminder to the man in the street of the remarks which he heard on his wireless or at the cinema or saw in his daily paper

Such is the power of well planned propaganda that the initial success of this campaign may be anticipated with confidence. Such success will mean more patients in the doctor's surgery for he is the universal clearing house and for the time being at any rate less time to give to each patient at the clinics The Minister and his colleagues will have no illusion that a successful popular appeal will suffice to bring the desired results of reduced maternal and tuberculosis mortality or improvement in the health of children and adults If these results are to be attained effort must be concentrated also on making the services themselves as nearly perfect as modern medical science and organisation can make them There is happily no reason to think that this aspect of the question will escape attention

ERGOTAMINE IN TACHYCARDIA

ERGOT and its preparations have been used in disorders that are accompanied by a disturbance of the vegetative nervous system and lately one of them ergotamine tartrate has been found particularly effective in some of these conditions It was at first thought to be a sympathetic depressant but Frommel and his co workers[1] believe its action in slowing a rapid heart to be directly on the muscle of the blood vessels After producing tachycardia in rabbits by injecting thyroxine Elityran or folliculin they were able to reduce the heart-rate with an injection of ergotamine tartrate by as much as 50 per cent and within fifteen minutes This effect was temporary and the dose used was relatively very large in comparison with those given clinically The authors admit that the preparations they used produce tachycardia by increasing sympathetic tone but believe that the effect of ergotamine can be interpreted better as an action on the vascular musculature than by a paralysis of the sympathetic a view which they support by slender experimental evidence If this is correct it is perhaps a further argument at least theoretically against the use of ergotamine in toxic goitre and in certain psychological conditions with symptoms suggesting disorder of the autonomic nervous system and closely resembling those of toxic goitre

GAS-ATTACKS ON WEEVILS

Two years ago as part of their scheme for stabilising the corn market the French Government decided to form an emergency store of wheat, and instructed the military authorities to purchase half a million tons either from dealers or directly from the producers. This the authorities proceeded to do but they then had to face considerable difficulties in the storing of this vast quantity It was finally decided to use 60 separate store-houses in different parts of the country and the wheat was transported to these by fleets of railway trucks barges and lorries Precautions had then to be taken against depreciation due to damp rodents and insects of which the last were likely to be much the most serious Damp was dealt with by giving free ventilation and by putting the grain into sacks which largely prevented the spread of any tendency to heat Rodents were found to do more damage to the sacks than to the actual wheat and the old fashioned cat and dog *assisted* where necessary by doses of a virus were sufficient to limit their ravages Weevils, the main insect encountered were however a very different matter A female weevil can produce 60 000 young in one season and since each young weevil is capable of spoiling one grain of wheat a single brood will spoil 60 000 grains weighing about 6–7 lb in a season; beside which, infested wheat is very liable to get hot and to be further damaged Various methods of asphyxiating or otherwise dealing with these insects were considered by a commission of the Ministry of Agriculture, and it was finally decided to use a war time lacrymatory gas, chloropicrine or nitrochloroform, which had since been found to be a first-rate insecticide The necessary materials were supplied by the Ministry of War, together with expert gas squads to carry out the work

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[1] Frommel E, Trottet, A, and Herschberg A. *Helv med Acta*, 1937 4 437

The method, as described by Prof Gabriel Bertrand,[1] its originator, is a very simple one once the storage warehouse has been made thoroughly airtight Shallow wooden troughs are arranged above the level of the sacks, with a calculated quantity of liquid chloropicrine in a petrol can beside each trough At a given signal the gas squad open and invert the cans and retreat in haste, sealing the door after them The chloropicrine evaporates slowly and, being heavy, percolates downwards through the sacks Twelve days are allowed for the gas to take effect, after which the doors and windows are unsealed and thrown open, and the gas escapes in sufficient dilution to do no harm to people in the neighbourhood The results are said to have been excellent Not only have all insects been exterminated, but this has been done without in any way affecting the bread making qualities of the wheat Breads made from treated and untreated grain were, in fact, found to be indistinguishable, even the flavour of dead weevils and rodents apparently disappearing in the processes of grinding and baking

A NEW SCHEME OF POST-GRADUATE STUDY FOR INSURANCE PRACTITIONERS

AT the concluding session of the B M A representative meeting held at Belfast on Tuesday a telegram was received from the Ministry of Health confirming a generous scheme of post graduate study for insurance practitioners Under this scheme the Ministry agrees to bear the whole cost—£5 5s fee, subsistence and travelling allowances—of a fortnight's refresher course every five years for any practitioner in England, Wales, or Scotland who has a certain number of insured persons under his care A sum of something like £50,000 will be available for the purpose and an experimental scheme in the coming autumn will pave the way for a more general scheme next year

THE STATE VETERINARY SERVICE

UNDER the new Agriculture Bill now before Parliament, all whole time veterinary officers of local authorities will be invited to accept appointments in a State Veterinary Service controlled by the Ministry of Agriculture The Government also intends to utilise the services of part time officers, but these will not become civil servants in the same sense as their whole time colleagues This establishment of a centralised veterinary service for the whole of Great Britain fulfils the recommendations of the National Veterinary Medical Association of Great Britain and Ireland, as recently set out in a pamphlet obtainable from them at 36, Gordon square, London, W C 1 But the Association insists that the scheme will lose much of its value unless the principal veterinary officer of the Ministry, being recognised as head of the new service, is directly responsible to the Minister himself This would give the principal veterinary officer the status enjoyed by the chief medical officer of the Ministry of Health, who has direct access to the Minister and is thus responsible for his own department But questions to Mr W S Morrison during debates in the House of Commons have not yet drawn any clear assurance that the veterinary service is really going to receive this recognition of professional status There is no doubt that such recognition, and the knowledge that their service is in fact directed by one of themselves, would do much to win the goodwill of veterinary surgeons for the new scheme We hope they will receive it

A COLLEGE IN MANCHURIA

'If you are planting for ten years plant trees
If you are planting for a hundred years plant men'

The Moukden Medical College long ago decided to choose the second of these alternatives and the list of 249 graduates at the end of the memoir published this year in honour of its semi jubilee shows that it has already had some return It is all the more disappointing, therefore, that its far-seeing plans for the future should to day be threatened with destruction by the hard compulsions of political change The college has lost 17 of its Manchurian staff, 7 of whom were heads of departments The work is being carried on with temporary help at present, but it cannot endure unless four European doctors can be sent out as additional members of the staff and maintained there for ten years In that time it is hoped they will be able to train up a new generation of Manchurian doctors accustomed to the new régime in Manchukuo To do this £1600 a year will be needed of which the college is prepared to find £1200 But a further £4000 is needed to maintain the fourth man for ten years In order to find this money it is proposed to open a memorial fund to Dr Dugald Christie, who founded the college in 1912 A tribute to his fine work there appeared in our columns on his death last year The men are available and willing and many will feel it a needless extravagance if this venture should be allowed to founder only through lack of money Contributions to the fund should be sent to Sir David Wilkie, 7, Polwarth grove, Edinburgh, 11

DR L J Witts, professor of medicine in the University of London and physician to St Bartholomew's Hospital, and Mr G E Gask, emeritus professor of surgery in the University of London, have been appointed members of the Medical Research Council in succession to Sir Thomas Lewis, F R S, and Sir David Wilkie, who retire in rotation on Sept 30th.

THE death is announced at Cannes, where he has lived for many years, of Dr Laurence Eliot Creasy who was one of the principal proprietors of THE LANCET between 1910 and 1920 The son of Sir Edward Creasy, chief justice of Ceylon, he was educated at Brighton College and University College, London, where he qualified M.R C S Eng in 1895 Dr Creasy practised electrotherapy in the early days of this specialty and was also interested in manipulative surgery He published a work, entitled Bone setting and the Treatment of Painful Joints, with Mr Frank Romer in 1911

NEW CANTERBURY HOSPITAL —This hospital was opened on July 14th by the Duke of Kent who laid its foundation stone a couple of years ago The Archbishop of Canterbury dedicated the building, and the Duke, who was accompanied by the Duchess, made a tour of the wards theatres, and nurses home The deficit on the hospital has been reduced to £20,000

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[1] *Ann. Inst Pasteur* 1937 58 482

SPECIAL ARTICLES

EPIDEMIC STREPTOCOCCAL INFECTIONS IN A GENERAL HOSPITAL

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THE epidemic that is described below is merely an example of what is occurring every year in general hospitals all over the country as a result of the introduction of streptococcus infection into a ward or wards. The resulting manifestations are in some cases infected wounds and in others sore throats; no rash need occur since the rash in infections with the *Streptococcus pyogenes* depends upon two factors—the toxigenicity of the organism and the immunity state of the patient. If cases with rashes occur then they are called scarlet fever and are isolated, but if no rash is present then although the ætiology is the same they are allowed to remain in the ward and are a source of infection to the other patients who acquire the disease, are rendered seriously ill and may in their turn infect the nursing staff and disorganise the hospital. It is not the object of this paper to discuss hospital administration or planning but merely by taking advantage of the typing of streptococci to outline the epidemics and discuss the applications of this outline. The hospital concerned in the epidemic distributes its oto-rhino-laryngological cases throughout the surgical wards including the children's ward.

THE EPIDEMICS

The series of epidemics began in January, 1936, with the admission to the hospital of two patients with cervical adenitis from both of which *S. pyogenes* Type 13 was isolated. During the last few weeks of 1935 four cases of streptococcus infection had been in the hospital, two being cases of tonsillitis (one developed before and one after admission to the children's ward) and two in the male surgical ward, one of whom was a patient who died of septicæmia and the other the nurse looking after him who contracted sore throat. Cases continued to occur until the end of May. The wards chiefly infected being the Children's Ward and D Ward, the female medical ward having an annexe for six maternity cases across the passage. The lay-out of the two wards is shown in Figs. 1–3. Owing to the fact that there had been streptococcal infections during the previous year arrangements had been made to examine bacteriologically all cases of purulent inflammation, all sore-throats, colds and nasal discharges among patients and nurses and to identify the serological type of the streptococcus concerned. The four cases above mentioned as the starting point of the epidemic were found to be due to Type 13 in the first two and Type 6 in the other two. As the epidemic progressed it was found to consist in reality of six superimposed epidemic waves, cases of infection with the six different types, 2, G, 5, 6, 11 and 13 being found during the same period.

The incidence from week to week of *S. pyogenes* infection is indicated in the case of the Children's Ward in Table I; it shows the arrival and persistence of different types. In addition Figs. 1 and 2 show the distribution of the cases in the ward on three different dates. Fig. 3 shows the same in D Ward. It can be seen how widespread the infection became and it is also apparent that there were three main epidemics due to *S. pyogenes* of Types 6, 13 and G. The latter is a strain which was persistently granular and impossible to type but from recent examinations it is probably Type 4. There were also lesser epidemics due to Types 2, 5 and 9.

Epidemic I. Type 13.—This appears to have originated with Cases 1 and 2 who were admitted with cervical adenitis

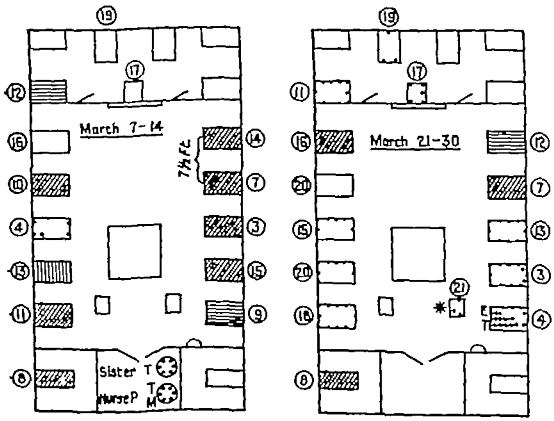


FIG. 1.—Children's ward showing Epidemic I and, a fortnight later, Epidemic II originating in either Nurse P or Case 4.

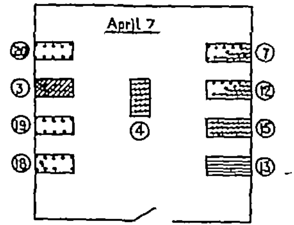
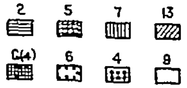


FIG. 2.—D Ward is a continuation of children's ward after segregation and shows Epidemic V arising from Case 4.

Key to Figs. 1–3

Types of Streptococci Depicted



* Latent infection. T = Throat. C = Cervix. M = Mastoid. N = Nose. E = Ear. I = Eye. The figures in circles represent the individual case numbers (as in Table I), those attached to letters the date of the pyrexia—e.g., T = Throat infection with pyrexia on 11th of the month.

It reached its maximum during the week following March 7th and had a high rate of complications, including one death from synpneumonic empyema. One case had a rash.

Epidemic II *Type* 6.—This began either with the nurse mentioned before, Nurse P., who had contracted tonsillitis whilst nursing a case of streptococcal septicæmia and who was working in the children's ward during the second week in January, being later found to have a positive throat, or from Case 4 who was admitted in January and later readmitted in February with a positive throat on each occasion. He was still positive when the main epidemic occurred which reached its peak in the week following March 21st. One death occurred from

TABLE I

(*Incidence of Types (in weeks)*)

Case	Ward	Diagnosis on admission	January				February				March				April				Complications
			(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	
1	Ch	Cervical adenitis	13	13	13	13	13	—	—	—	—	—	—	—	—	—	—	—	Suppurating glands (13)
2	"		—	13	13	13	13	13	13	—	—	—	—	—	—	—	—	—	
3	"	Fract femur	×	×	13	13	13	13	13	13	13	13	13	6	6	13	5	6	Mastoiditis (13, 6)
4	"	Otitis	—	—	—	6	—	—	6	6	6	6	6	6 5	6 5	5	11 2	×	Otitis (6, 5)
5	"	Endocarditis	×	×	×	6	6	6	6	6	×	×	×	×	—	—	—	—	Tonsillitis
6	"	Otitis	—	—	—	2	2	2	2	—	—	—	—	—	—	—	—	—	Otitis, adenitis (cervical) (2)
7	"	Fract skull	×	×	×	×	13	13	13	13	13	13	13	13	13	6 5	5	×	Otitis mastoid (13)
8	"	Pneumococcal peritonitis	—	—	—	×	13	13	13	13	13	13	13	13	13	—	—	—	Tonsillitis otitis (13)
9	"	Retropharyngeal abscess	—	—	—	—	—	—	2	2	2	2	—	—	—	—	—	—	None
10	"	Cervical adenitis	—	—	—	—	—	—	—	—	13	13	6	—	—	—	—	—	Suppurating glands (13)
11	"		—	—	—	—	—	—	—	—	13	13	6	6	—	—	—	—	
12	"	Tuberculous glands	—	—	—	—	—	—	—	×	×	2	2	2	2	6 5	5	13	Mastoiditis (2 5)
13	"	Otitis	—	—	—	—	—	—	—	—	—	7	7	6	6	2	2	2	Mastoiditis, pneumonia (7, 6, 2)
14	"	Diabetes mellitus	—	—	—	—	—	—	—	—	×	13	13	✣	—	—	—	—	Empyema (13)
15	"	Pneumonia	—	—	—	—	—	—	×	×	×	13	6	6	6	5	13 11	×	Otitis nasal discharge (13, 6)
16	"	Nephritis	—	—	—	—	—	—	×	×	×	×	13	13	—	—	—	—	Non-clinical
17	"	Marasmus	—	—	—	—	—	—	—	—	×	×	6	6	—	—	—	—	Infected parents and sister (6)
18	"	Pneumonia	—	—	—	—	—	—	—	—	×	×	×	6	6	6	✣	—	Otitis, myocarditis death (6)
19	"	Fract skull	—	—	—	—	—	—	—	—	×	×	×	6	6	6	13	×	Nasal discharge (13)
20	"	Hernia	—	—	—	—	—	—	—	—	—	—	×	6	6	6	—	—	Nasal discharge (6) otitis, infected wound
21	"	Poisoning	—	—	—	—	—	—	—	—	—	—	—	6	6	—	—	—	Non clinical
22	D	Pregnancy	—	—	—	—	—	—	×	G	G	G	G	G	G	G	—	—	Puerperal sepsis, uterus cervix throat
23	"		—	—	—	—	×	×	×	×	×	G	G	×	—	—	—	—	—
24	"		—	—	—	—	—	×	×	×	×	G	G	×	—	—	—	—	—
25	"		—	—	×	×	×	×	×	×	×	G	G	×	—	—	—	—	—
26	"	Myocarditis	2	×	9	×	×	6	6	6	×	G	G	×	×	×	×	×	Adenitis
27	"	Diabetes mellitus	—	—	—	—	—	—	—	—	—	×	G	G	G	G	—	—	Otitis adenitis
28	"	Coronary thrombosis	—	—	—	—	—	—	×	×	×	×	G	×	—	—	—	—	Adenitis
29	"	Cataract	—	—	—	—	—	—	—	×	×	G	G	—	—	—	—	—	Adenitis, conjunctivitis
30	"	Pneumonia										×	9	9	—	—	—	—	Adenitis
31	"	Asthma	—	—	—	—	—	—	—	—	—	G	G	G	✣	—	—	—	Toxæmia death
32	"	Microcytic anæmia	—	—	×	×	×	×	×	×	×	9*	×	×	—	—	—	—	Non clinical
33	"	Asthma	—	—	—	—	—	—	—	—	—	×	×	9	9	✣	—	—	Tonsillitis, adenitis.
34	"	Pyelitis	—	—	—	—	—	—	—	—	×	×	4*	×	×	—	—	—	Non-clinical
35	"	Diabetes mellitus	—	—	—	—	—	—	—	—	—	×	G*	×	—	—	—	—	
36	"	Rheumatoid arthritis	—	—	×	×	×	×	×	×	×	×	13	13	×	—	—	—	Adenitis (13)
37	F	Otitis	—	—	—	—	—	—	—	—	—	—	×	6	6	6	6	6	Mastoiditis
38	A	Surgical emergency	—	—	—	—	—	—	—	—	—	×	×	13	13	×	—	—	Adenitis
39	"	Otitis (pneumococcal)	—	—	—	—	—	—	—	—	—	×	×	13	13	×	×	×	Mastoiditis
40	C	Pneumonia											×	×	2	2	2	2	Cellulitis of chest (2)
41	"	Mastoiditis	—	—	—	—	—	—	—	—	—	—	2	2	2	2	2	2	Mastoiditis
42	"	Diabetes mellitus	—	—	—	—	11	11	11	11	11	11	11	11	11	11	11	11	

Ch = Children's ward   * = Non-clinical   × = In ward   ✣ = Died

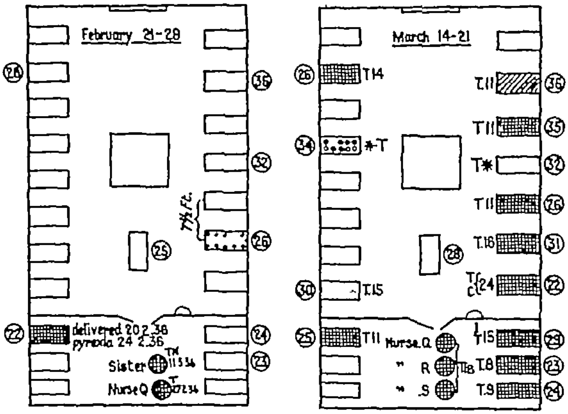


FIG 3—D ward (female medical ward, with annexe—E ward—for six maternity cases) showing progress of Epidemic III

pneumonia and no cases had rashes There was however a high incidence of otitis media and mastoiditis.

Epidemic III Type G—This began with a case of puerperal sepsis Case 22 and from the routine swabs from the throats of contacts she apparently acquired the infection from Nurse Q who had chronically infected tonsils The probable type number of this strain Type 4 has already been mentioned Clinically the epidemic although spreading rapidly through the ward was rather mild and there were no complications. The sister in the ward however was infected and she in her turn gave it to the matron of the hospital As soon as the initial case of puerperal sepsis occurred the ward was of course closed for midwifery cases. One case of rash occurred.

Epidemic IV Type 2.—This was the type that had been prevalent in the district for the preceding three months and which had been the cause of a large milk borne epidemic (Camps and Wood 1930) The incidence of cross-infection during this outbreak (milk borne) was small but as time passed it became more frequent and complicated cases were admitted sporadically during the year (1935) Clinically it had a fairly high complication rate and caused a severe type of disease almost invariably with adenitis

Epidemic V Type 5—The source of the original infection of Case 4 is obscure but it was probably introduced from outside This patient was ill for only about 24 hours and was allowed to get up. The danger of ambulatory convalescents is well shown by the infection of Cases 3 7 12 and 15 which rapidly occurred.

Epidemic VI Type 9—This was localised in D Ward and consisted of two sporadic manifest cases with one death both in asthmatics

MECHANISM OF SPREAD

From these observations it appears that the mode of spread took place in the following directions.

(*a*) *Patient to nurse.*—Illustrations of this are provided by the following cases: In Epidemic II the sister of the ward contracted Type 6 tonsillitis as also did one of the nurses which in her case was complicated by acute mastoiditis In Epidemic III a similar thing occurred. It is also illustrated in Table II which shows the incidence of swab positive nurses compared with cases in the wards in which they worked.

TABLE II

Incidence of Various Types of S pyogenes in Patients and Nurses

Type	2	4	5	6	9	11	13	G
A and B Wards—								
Nurses	0	0	0	0	0	0	1	1
Patients	0	0	0	0	1	0	2	0
C Ward—								
Nurses	1	0	0	0	0	1	1	0
Patients	2	0	0	0	1	1	0	0
D and E Wards—								
Nurses	0	0	0	1	0	0	0	5
Patients	0	1	0	2	1	0	1	9
F Ward—								
Nurses	0	0	0	0	1	1	1	3
Patients	0	0	0	2	0	0	1	0
G Ward—								
Nurses	0	0	0	1	0	0	0	0
Patients	0	0	0	2	0	0	0	0
Private (cubicles)—								
Nurses	1	0	0	1	1	0	2	0
Patients	0	0	0	0	0	0	0	1
Children's Ward—								
Nurses	0	0	0	2	0	0	0	0
Patients	0	0	6	15	0	3	12	0

Some of the nurses acquired a clinically infected throat after a positive non-clinical throat

(*b*) *Nurse to patient.*—This is illustrated in Epidemic III in which the sudden spread can only be attributed to the nurses. In addition in the male surgical ward the infection of a nurse with Type 13 laryngitis, which she acquired from another nurse friend, was rapidly followed by two cases of Type 13 tonsillitis in the ward.

(*c*) *Patient to patient.*—This is well illustrated in Epidemic V with the ambulant case of Type 5 tonsillitis already mentioned.

(*d*) *Nurse to nurse.*—That this occurred is shown in Table II and also by the presence of infections in the other wards in the hospital

The most important method by which streptococcal infection was spread from person to person was of course the inhalation of droplets from infected respiratory tracts. A second group was no doubt direct contact with infected surfaces or indirect contact through instruments table-ware, toys, and other articles summed up descriptively as fomites.' No actual bacteriological tests were made to assess the relative importance of these A third possible source of infection however was infected dust, and observations by exposing culture plates in the wards showed that Types 2 4 5 6 and 13 could readily be picked up on such plates (both by day and at night) Allison and Brown (1937) have pointed out the heavy infection of the air of a scarlatinal ward, but it is obvious that a general hospital ward in which are cases of streptococcal infection may be similarly charged with the streptococcal types of the cases that are in present in it.

THE NURSING STAFF

Table II shows the incidence of positive swabs from the throats of the nursing staff. These were obtained from both clinical and non-clinical throats, in the former from one routine swabbing of the entire staff carried out between March 21st and 25th and in the latter from the throats of the cases when they were taken ill. It shows that 25 throat swabs were positive and of these 11 were clinical cases. The total number of nurses in the hospital is 68 It is of interest to note that all the types found in these throats were already present in cases of infection among the patients

PREVENTIVE MEASURES

The immediate method of dealing with the epidemic was to attempt to prevent the spread by the routes already mentioned All nurses were made to wear masks and gloves for dressings, all crockery was sterilised after use, and the sisters were instructed to report all cases of sore throat or colds among the nurses and patients All pus evacuated and all sore throats and colds were swabbed and examined bacteriologically for *S pyogenes* Convalescents were kept in bed and nurses with clinically infected throats were kept off duty until clinically negative Complete barrier nursing was not possible owing to the shortage of nurses Finally, all positive cases were segregated from negative cases, but isolation for type segregation was not possible All further admissions were of course stopped In spite of this, cases continued to occur and a further method was sought It was desirable that all cases that were positive should be regarded as infectious and removed from hospital but most of them were too ill to be moved to their own homes where nursing facilities would not be available, and at the same time they were not entitled to admission to the fever hospital as they were not "scarlet fever" With the active coöperation, however, of Dr J C Sleigh, the medical officer of health, arrangements were made for all cases from whom *S pyogenes* could be isolated to be treated as scarlet fever (which of course in essence they are) and be transferred to the fever hospital. By this means the wards containing the cases were emptied and cleaned, and the hospital could be opened once again The problem then arose as to how to prevent further outbreaks and, after conference with Dr Sleigh, arrangements were made so that any case of known streptococcal infection could be admitted direct to the fever hospital whether a rash was present or not, so long as *S pyogenes* had been isolated bacteriologically If the patient was not very ill, he would be swabbed at his own home and, if positive the next day, would be sent to the fever hospital or, if negative, to the general hospital. If, however, he was too ill to await the result of the swab, then he would be admitted to the general hospital and barrier-nursed until the result was known, and then the same procedure as before adopted As a result of this practically all cases of acute mastoiditis have been sent to the isolation hospital during the last year and the incidence of streptococcal infection has been reduced to 24 cases during the last twelve months, this including cases which would have been labelled as colds and tonsillitis occurring among the nurses

CONCLUSIONS

The epidemic is of interest in showing one of the possibilities of using serological identification of types as a method of obtaining a true estimate of the extent of an epidemic of streptococcal infection in a community It illustrates the danger of cross infection in the wards as has been shown by Allison and Brown (1937) in connexion with fever hospitals It also shows that the observations of Elliott and Okell, indicating that the chief sources of infection are inflammations of the ear, nose, and throat, are easily confirmed, and it demonstrates an alternative method of preventing such infections As has been observed, one of the chief factors in preventing infection is adequate spacing of beds, but to obtain such spacing would mean sacrificing a great many valuable beds Hence it would appear better to exclude such potentially infectious cases altogether Finally the wearing of properly constructed masks cannot be too much stressed

SUMMARY

1 An epidemic or series of epidemics of infection with *S pyogenes* in a general hospital has been described

2 The sources of infection have been investigated and traced by means of the serological typing of the streptococci.

3 Preventive methods have been described against spread of such infection

Our thanks are due to Dr F Griffith of the Ministry of Health Laboratory, who kindly provided the serum with which the typing was carried out and without whose help the investigation would never have taken place, also to his colleagues Dr W M Scott and Dr V D Allison for their assistance and advice, and finally to Mr C F Attoe, technical assistant to one of us (F E C), for his active coöperation

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THE RELIABILITY OF CONTRACEPTION

In recent years there has been included in the penny and halfpenny mail, which members of the medical profession have found on their breakfast table, an increasing number of circulars extolling the merits of proprietary contraceptive preparations, and an increasing space is devoted to them in the advertisement columns of medical journals These announcements raise three simple questions about the method concerned to which the doctor would like straight answers is it safe, is it practicable, is it reliable? By the method of animal experiments, the first of these questions is fairly easily answered for chemical preparations which are supposed to be used alone, the second is also fairly easy to answer, for most chemical preparations, though the matter of cost for poor people is an important consideration, but that the problem of reliability is by no means easy to solve quickly and accurately, when mechanical methods are in question, is clear from a recent scrutiny of the statistical findings of a birth control clinic[1]

Dr Moses' report covers a period of five years during which the Bureau for Contraceptive Advice in Baltimore carried out a special and as far as we know a unique inquiry The inquiry, we are told by Prof. Raymond Pearl in a foreword, was not merely a by product of the philanthropic activity which is usually responsible for the foundation of birth control clinics, the bureau was established with the sole intention of collecting for subsequent study and analysis records of one thousand women referred to it for medical reasons

The main findings are as follows —

Of 1152 patients referred by physicians on medical grounds to the bureau 1069 were given contraceptive advice Of the patients treated, 867, or 81 per cent, were white and 202 or 19 per cent, were negroes The intelligence of the group of referred patients was estimated as low in 61 per cent medium in 35 per cent, and high in 4 per cent Approximately 20 per cent more negro patients than white were of low intelligence Roughly 88 per cent of the white women and 69 per cent of the negro women had used some method of contraception either regularly r intermittently before their first visit to the bureau Of these only 15 per cent had used contraceptives with success No less than 1008 abortions were reported as having been procured by the women in the group 27 were therapeutic and 981 spontaneous or induced and of these 981 approximately 37 per cent were acknowledged as having been either criminally or self induced The average number of abortions per patient was 2 1 that is the 981 abortions were in 468 patients In almost 95 per cent of the treated cases the use of a vaginal occlusive diaphragm plus a spermicidal jelly and douche was advised The method is not regarded as complicated and patients of very low mentality could learn it About 45 per cent of the total number of treated cases attended the clinic and used the method successfully for periods of six months to six years only 27 4 per cent of the total number of treated women however were active patients at the time the follow up was completed Nearly 55 per cent of these active patients were of low intelligence

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[1] Contraception as a Therapeutic Measure By Bessie L Moses M D London Bailliere Tindall and Cox. Pp 106 4s 6d

Undesired pregnancies were experienced by 234 of the total treated group of 1069 women Of these 169 had not used the method advised 36 had used the method but with defective materials or faulty technique; and only 29 claimed to have followed the clinic's instructions Thus only 2 7 per cent of the total treated cases can be regarded as having experienced unaccountable failures of the method In the group that became pregnant roughly 71 per cent of the patients were of low intelligence—that is 10 per cent more were of low intelligence than in the group as a whole With 204 of the treated patients, or 10 8 per cent the clinic lost touch during the period of three months before the termination of the inquiry or for a longer period before that date These patients are described in the report as inactive They had used the method for periods of from six months to four years. Apart from these 243 women, or 22 per cent of the total made no first return visit or one return visit only and could not be traced Many patients were referred to physicians or hospitals for medical or surgical care during their attendance at the Bureau Bimanual and speculum examinations were made on patients at yearly intervals and in no case was there noted any injurious effect of the contraceptive method

Physical and mental improvement attributed to respite from childbearing and relief from fear of pregnancy was observed in a number of the women

From this summary it will be seen how difficult to appraise is the reliability of the pessary method. A proportion of treated patients, here nearly a quarter of the total are not seen by the clinic after their first or second visit; with another considerable proportion the clinic loses touch after a varying length of time and it is impossible to know how they have fared another group of women cease to use the method because of such factors as death (of themselves or their husbands) the menopause sterilisation or separation There is left a proportion—here a little over a quarter—who use the method advised and are kept under observation from the moment they first attend the clinic to the time when the report is written But the date on which the clinic was first attended varies during the period comprised in the inquiry thus the women in this group had been kept under observation for different lengths of time In Dr Moses report the time varied from six months to six years Some of these women experienced unwanted pregnancies, but mostly the failures are accountable by wrong technique omissions of part of the technique or defects in the material After allowances have been made for these there remains a small group of unaccountable failures ranging in the investigations hitherto published from 1 to 3 per cent. of the women who have used the method advised.

From none of the figures yet published can we deduce accurately what are the chances, at each act of coitus of the occurrence of an unaccountable failure With the pessary technique here described the chance would appear to be about 1 in 4000 In calculating this figure it has been assumed that in the group observed coitus takes place once a week that the method is used for an average duration of two years that the unaccountable failure rate is 2 per cent and that there are no unplanned pregnancies or separations. Allowance is made for the menstrual periods which are assumed to take up ten days in every fifty It is to be noted however that while it may be true to say that the chances of an unwanted pregnancy at each act of contracepted coitus are 1 in 4000 it by no means follows that contraception is actually instrumental in preventing pregnancy in 3999 cases of coitus out of 4000. In an unknown number of cases the women or the men may be physiologically sterile so that contraception is unnecessary; and in a much larger number contracepted coitus may take place at a period in the menstrual cycle when the potentially fertile woman is sterile

VIENNA

(FROM OUR OWN CORRESPONDENT)

THE NEW LAW ON ARTIFICIAL ABORTION

THE Austrian Federal Legislative Council has just promulgated a series of regulations dealing with the burning question of artifical abortion. Hitherto the practice has been allowed only when advised for medical reasons and under the former Government there were many vain attempts to legalise a "social indication A medical indication however was not very difficult to find especially in the wealthier patients so that the proportion of medically indicated abortions in private hospitals was becoming alarming apart from the unknown number of cases privately induced It is the appalling drop in the birth rate and the disappearance of the excess of births over deaths in this country that has caused the law to attack this problem because it is believed that abortion induced without sufficient indications is the chief factor in the declining birth rate The figures given by the representative of the medical profession in the legislative council in the discussion on the new Act serve as an illustration He said that in Vienna there were in 1936 over 14 000 more deaths than births and in the entire Republic there was a deficit of 4 births per 1000 deaths

The new Act of budding life (as it is called) has two main parts the first of which regulates the procedure to be observed whenever a doctor considers an artificial abortion necessary The governing principle is that only a qualified medical man may perform the operation and only in a registered public or private hospital Every case must be notified beforehand—unless there is *periculum in mora*—to a special committee of three medical men consisting of the local chief public health officer a surgeon or gynæcologist and a physician if required any other specialist may be asked to coöperate Whenever the practitioner is convinced that a continuation of pregnancy is dangerous to the life of the mother he must under the new Act ask the opinion of this body whether they consider all precautions to save the fœtus have been taken and he must give in writing all the details of the case. But the woman herself cannot be compelled to submit to an examination or to appear before the committee. The committee give no advice, and give no order to the doctor, but simply states its opinion (1) that the woman needs observation in a public hospital, (2) that there is no proof that the continuation of pregnancy will endanger her life, or (3) that all other alternatives to save the lives of the fœtus and the mother have been exhausted. These statements are recorded in writing and must be signed by all its members. A case deemed unsuitable may be brought again before the committee after a lapse of time if the doctor believes it to be necessary, or if the verdict of the committee has done nothing to improve the woman's condition. Therapeutic abortion elsewhere than in a public or private hospital is allowed only when the condition of the patient precludes her transport to the hospital. Every case of abortion must be notified in writing within 24 hours to the examining committee which is formed in every district office of public health. Private hospitals violating the Act may be struck from the register of licensed hospitals.

The second part of the new Act deals with the penal provisions. An unqualified person attempting to induce abortion, even if the pregnant woman consents, is liable to a sentence of six months' hard labour. If the attempt is successful the term is 1–5 years, or 10 years' penal servitude for repetition of the crime. In every case the pregnant woman herself is regarded as the chief offender, unless the operation took place without her consent or knowledge. A medical man who induces abortion without acting in accordance with the new regulations may be fined 2000 Austrian shillings or have 3 months' imprisonment, while for repeated violation he may be struck off the Medical Register for 3–12 months or permanently. There is no penalty, however, if he performs the operation on a woman, whose life cannot otherwise be saved, without her consent, but he must at once notify the committee of the fact. Any person assisting or persuading a pregnant woman to induce abortion, or assisting a medical man in such an act, knowing it to be illegal, will be regarded as abetting, and may incur a sentence of 1–5 years' penal servitude.

Many regard this new Act as unsatisfactory. A "social indication" is considered a real necessity, and in any case the new obstacles to a convenient interruption of pregnancy will no doubt be overcome in some way, as, for example, by a temporary stay in a neighbouring country where the operation is legal. They hold that birth control is a more important factor responsible for the low birth-rate, and attribute its growing practice to the prevailing bad economic conditions.

GOITRE IN ANIMALS AND MAN

At a recent meeting of the Vienna Veterinary Society Prof. W. Hausmann from the Ministry of Public Health reported on the investigations into the incidence of goitre in human beings and in animals. It was hoped that this might give valuable information about the connexion between the two types. From the investigation, which has been going on for a few years, it appears that similar factors are responsible. A questionnaire reveals that in animals also the condition is partly endemic, partly sporadic. Apart from any extrinsic cause it seems that there may be a hereditary factor, for example, 70 per cent. of the offspring of one goitre free he-goat had the disease, and also it is not uncommon for some breeds of household animals to have a remarkably high incidence. The proof of this is naturally very difficult, since careful breeding and an absolutely goitre free environment are essential. Prof. Wagner Jauregg, who took part in the discussion, said that in man sporadic goitres occur in many generations of the same family, generally in the females, whilst the surroundings are above suspicion. In endemic goitre, on the other hand, heredity is not important. Investigations in the Tyrolese and Italian Alps have shown that 90 per cent. of the boys and 92 per cent. of the girls in the schools are affected, while in other districts even 98 per cent. of the school children had goitre. After introducing iodised salt for everyday use—1 mg. potassium iodide to every 1000 grammes of salt—as advised by Wagner Jauregg, the goitrous state of the population was greatly improved.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION

By the unanimous wish of the court, senatus, and medical faculty of the University of Edinburgh Sir Thomas Holland, its vice chancellor, attended the inaugural meeting of the congress of the Medical Women's International Association in Edinburgh last week, and extended a welcome to the 300 delegates and members representing more than twenty countries. He called special attention to the unanimity and cordiality of the welcome to emphasise the change in the attitude to medical women since, sixty nine years ago, Sophia Jex-Blake tried to gain admission to Edinburgh University to study medicine. As the University decided that it was not advisable to alter its regulations "in the interests of one lady," Miss Jex-Blake returned the next year with some other ardent spirits. They were admitted to some classes but not to others, and failed to get the formal recognition necessary to qualify. Four years later, in the Court of Appeal, a bench of twelve judges decided by a majority of seven against five that Edinburgh University had exceeded its powers in framing regulations for the admission of women medical undergraduates. Nevertheless, Sir Thomas said, the small band had earned credit not only within the examination halls to which they were admitted but for the conduct for their fight for recognition. They had to yield to the judicial decision as far as Scotland was concerned, so they retreated southwards and prospered there. It was twenty years later that Edinburgh University framed regulations for the admission of women to graduation. For a further period of twenty years the University continued to exclude women from its intramural classes, and acted only as an examining body for those women students who received their training outside its walls. Since 1916, when women medical students were first admitted to university classes, 600 have qualified at Edinburgh. The annual recruitment is now limited, for only 200 students of both sexes can be admitted each year, and these are selected from double that number of applicants.

Dr. Alma Sundquist of Sweden, president of the association, spoke of the international friendship founded on common work for common ideals. Sir Norman Walker recalled his long experience of association with women students and doctors, beginning 45 years ago in Alexander Bruce's laboratory. The presidents of the national associations of medical women who were present in the room, notably those from the United States Austria France Rumania and England were called in turn and spoke with such point and brevity as to earn guarded praise from Sir William McKechnie former Secretary to the Department of Education for Scotland Women have not yet learned to speak too long in public he said they will!' Sir William delighted an audience mostly in academic dress by his reference to the 'gorgeous panoply of borrowed plumes' with which he was surrounded in a speech which he succeeded in making brief bright, and brotherly' The McEwan Hall was well filled for this formal opening ceremony which provided an auspicious start to a highly successful congress.

PARIS

(FROM OUR OWN CORRESPONDENT)

THE MEDICAL CONTROL OF LICENSED BROTHELS

Dr Lévy Bing who is the contrôleur technique sanitaire de la prostitution for Paris and the Seine has presented the Minister of Public Health and the Prefect of Police with a report that contrasts in vivid disillusion the theory with the practice of the medical inspection of licensed brothels The Minister of Public Health's reaction to this report was his assertion that if he could have felt some hesitation before abandoning the old system of regulation this hesitation would have completely disappeared on his learning how almost totally ineffective such medical inspection was from the point of view of public health. M Lafenestre director of hygiene at the Prefecture of Police has also publicly admitted that the microbiological control of the carriers of germs is practically impossible. According to Dr Lévy Bing licensed brothels are inspected twice a week by a doctor whose hours of attendance are fixed beforehand The prostitute who wishes to avoid medical examination on any given occasion has therefore only to time her outings so that they synchronise with the doctor's visit Although prophylactic notices are supposed to be prominently displayed in every room of a brothel. and tubes of prophylactic ointment are included in its official equipment these accessories were found on inspection to be conspicuous by their absence the proprietors evidently being unwilling to present their clients with such rude reminders of only potential evils As for the actual medical inspection it was effected by means of one and the same speculum whose itinerary from one suspect to another was punctuated by no ritual of disinfection but only by immersion into one and the same jar of vaseline between each case These are only a few samples marking the hiatus between theory and practice and the futility of the so-called regulation of prostitution under medical control.

MEDICINE AND THE LAW

Hospital Charges in Traffic Cases

MENTION was lately made in these columns of a case where the Lord Chief Justice allowed a dentist a much smaller sum than had been claimed as his fees for treating the victim of a traffic accident. Last week Mr Justice Swift at Birmingham Assizes used the epithet absurd of an item of £173 which represented hospital and doctors fees in the claim of another patient injured by a motorist. The learned judge playfully ascribed to the honorary surgeons the attitude of demanding fees as though the patient was a millionaire merely because he was insured 'Had he been a poor derelict left by thieves who work on the road from Jerusalem to Jericho we would have treated him for nothing we might even have gone so far as to give him two pence for his future lodging but, as he happens to be a motorist (and as nowadays every motor-car has to be insured) we will charge him £173 There was no doubt, added the judge that the hospital was entitled to something; but it was absurd to regard these fees as proper I would let the hospital sue me in the county court before I would part with anything like that amount The result of the case was that the plaintiff was awarded £850 damages (with costs) for personal injuries caused by the negligence of the defendant motorist He had suffered concussion and there were abrasions of the face involving some disfigurement and internal injuries As he was detained in Kidderminster and District General Hospital for 28 weeks and underwent two operations, Mr Justice Swift's own estimate of the appropriate hospital charges was not very generous Asked by plaintiff's counsel for advice regarding these charges, the judge reported I should think if you gave them £50 and let them dispose of it as they like they will have done very well out of you. This estimate scarcely takes into account that the average cost of an *ordinary* patient at the Kidderminster Hospital is over £2 5*s* a week, according to the Hospitals Year Book 1936 while the minimum charge for paying patients is £3 3*s* and there is presumably a rule whereby honorary surgeons are entitled to charge fees. The existence of such a rule at a hospital seems to be obnoxious to judicial opinion Hence the allusion to the parable of the good Samaritan.

The difficulty of the hospitals in the treatment of traffic casualties is notorious. No hospital wants to see its wards filled with such cases The trouble of trying to recover the cost of treatment is discouraging The remedies given by various Road Traffic Acts are complicated and often less than adequate Mr Baynes, in his "Hospital Law Notes" (published by the Joint Council of the Order of St. John and the British Red Cross Society) differentiates the statutory payments recoverable First there is the claim (under Section 16 of the 1934 Act) for a fixed fee of 12*s* 6*d* for the emergency treatment rendered to the patient immediately after the injury The hospital cannot claim this fee if a qualified doctor has already treated or examined the patient before admission Secondly there is the right of the hospital (under Section 36 (2) of the 1930 Act as amended by the 1933 Act) to claim from the insurance company where the company has made a payment to the patient. The hospital's claim is limited to £5 for out-patient treatment or £50 for in patient treatment Within this limit of £50 the hospital can claim the cost of the daily maintenance of the in patient calculated according to the average for all in patients. Here no additional charge can be made for an operation or for any special form of treatment In the opinion of Mr Baynes the Act does not allow a hospital to pay its medical staff special fees for attending motor-accident cases and then to add these fees to the costs of treatment to be recovered from an insurance company But, he adds, there is nothing to prevent a hospital from making such payments as it chooses to its medical staff in respect of road accident cases and including such fees in its total maintenance expenditure in respect of all in patients This would increase the average daily cost of maintenance, but, as road traffic cases represent only a small proportion of all in patients, the increase will not be very great Lastly there is the remedy of recovering the cost of treatment by a claim at common law—i e, not under the Road Traffic Acts This remedy is not open to a hospital which is prevented by its constitution from making charges for patients' treatment or maintenance It is available only where the hospital has a valid legal claim against the individual patient personally for the costs of his treatment When pursuing the common-law remedy, the hospital obtains the patient's consent that its cost of maintaining and treating him shall be included in the claim which his solicitors make against the defendant motorist The hospital sends the plaintiff's solicitors its account for the full cost of maintenance and treatment (including doctors' fees, X ray examinations, and special treatments) and the patient is asked to sign an undertaking that when he is compensated by the defendant motorist or by the insurance company, he will pay the hospital its reasonable proportion of the sum which he recovers By this method the hospital is not prevented from recovering the full cost The £50 limit under the Road Traffic Act does not apply If the Kidderminster Hospital was seeking to avail itself of this common law method in the recent case before Mr Justice Swift, the judge, in saying that the hospital would do well enough if it received £50, cannot have been thinking of the Road Traffic Act limit of £50 since no such limit exists at common law The coincidence of the figure is confusing

Removal of Officials under the Lunacy Act

In giving the result of the appeal of Dr McManus last month (THE LANCET, June 19th, p 1481) we stated that the Court of Appeal was unanimously of opinion that the visiting committee had power under the Lunacy Act to remove one of its servants at will The appellant's solicitor points out that this was an inaccurate statement Lord Justice Greer, who presided, expressed the contrary view Section 276 (3) of the Lunacy Act, he said, provided that the committee might remove any person appointed under the Section. Mr Croom-Johnson, K C, had contended that "remove" meant remove at its pleasure as and when the visiting committee in its discretion might think fit "I think," said the Lord Justice, "that it means nothing of the sort The word is 'remove' and there are not any words which make it necessary to put upon it the interpretation of 'remove at will' or 'remove at pleasure'" The two other members of the court however, took the opposite view

Thus, as a matter of historical fact on a point of great interest to officers appointed under the Lunacy Act, the Court of Appeal was not unanimous on the question of removal at pleasure But it was unanimous in holding that the claims had not been brought within the statutory time-limit of six months This was fatal to the appellant

A Dentist's Fees

In Evans *v* Tomaschepolsky the Lord Chief Justice reduced an item of £619 for dentist's fees to £350 The plaintiff was a married woman who claimed damages for injuries due to alleged negligence on the part of a motorist Four of her front teeth were displaced and she had received special dental treatment over a long period The defendant's counsel described the claim of £619 as "positively shattering" The dentist, giving evidence in support of his charges, said he had paid eleven visits to Mrs Evans in Sussex His treatment was to restore the teeth to their original position The patient, he said, was a prepossessing young woman, removal of the teeth would have made her look fifty years old. At one stage of the proceedings Lord Hewart inquired if the question was not this—how much would a reasonable person consider that a beautiful woman should spend on saving four front teeth? When the Lord Chief Justice eventually awarded £350 for the dentist's fees, he described that sum as a fair one "for supplying treatment that was justified" The court does not seem to have doubted the value of the dentist's services or to have disputed the propriety of the charges, but rather to have come to the conclusion that the treatment went beyond what was reasonably necessary for repairing the injuries for which the negligent motorist must be made to pay The total of £619 may have sounded extravagant, mileage fees on eleven 80 mile journeys would make a by no means negligible sum.

PHYSIOLOGY OF DWELLINGS

AT the end of last month the housing commission of the League of Nations Health Organisation met at Geneva A subcommittee had been deputed to consider environmental conditions in dwelling houses and it presented a report This points out that it has been found impossible to establish a uniform standard for the optimum environmental conditions governing bodily heat exchanges Standards or zones of comfort have been indicated by the hygienists of various countries on the basis of the various indices that have been suggested, but these standards are valid only for the region, type of occupation, indoor conditions, heating methods, clothing, age, race, season, and climate for which they were established What is more, other things being equal, the sensation of comfort varies in different individuals Hence the zones of comfort indicated by the various methods represent a "mean" comfort—i.e, the sensation of comfort as felt by the majority of persons examined.

Owing to differences of climate and national custom, hygienists hold different views about the best standards for temperature movement and moisture of the air Thus British authorities are in favour of a lower range of temperature for home or similar conditions than their American colleagues, although their views on minimum air movement are the same Whereas Anglo American hygienists prefer very slight air movement, in France the aim is to prevent any air movement at all in the immediate vicinity of human beings The standards applied in different countries for the floor space or cubic content of family dwellings also vary to some extent because of the differences of national customs and standards of living On the whole the committee assumes, however, that on hygienic grounds a living room used in the daytime or a sleeping room at night should each provide at least 15 cubic metres per person, and if sleeping and living rooms are separate, a total of at least 25 cubic metres per person for a total dwelling is essential

The English representative on the subcommittee is Dr G P Crowden and the expert advisers included Mr T Bedford, Ph D, and Mr A F Dufton A report was also submitted by the subcommittee on noise, whose chairman is Mr G W C Kaye, D Sc

PUBLIC HEALTH

Fitness for Physical Training

A VALUABLE record of functional tests of nutrition in school-children appears in the annual report of Dr E H Marcus Milligan school medical officer for Glossop The tests he used were two of those suggested by Dr E H Magee of the Ministry of Health a couple of years ago (see *Lancet* 1935 1 268). Strength was measured by the pull of the whole body on a special dynamometer giving a pull/weight ratio—i e the total pull divided by the subject s weight—and endurance was shown by the time that the subject could hang from a horizontal bar With healthy children Dr Milligan found, the pull/weight ratio was usually about 2·0 and rarely below 1 7 while for endurance about 130 seconds was normal and less than 100 seconds uncommon It was noteworthy that children whose strength and endurance figures were considerably below normal showed steady improvement when conditions were improved and they were given meals at school thus the pull/weight ratio increased in one case within a year from 1 74 to 1 99 with a similar rise in the endurance time. This advance in physical efficiency was in general harmony with the improvement in nutrition coefficients and though the three standards did not coincide in every individual—or there may be heavy weight with little strength, or strength high with poor endurance and vice versa—the general trend of all the figures strongly indicates real and general improvement

A more novel and important use of these tests is to gauge the fitness of children for physical exercises The greatest care as Dr Milligan says should be taken to see that underfed malnourished or diseased children are not allowed to carry out severe physical exercises It therefore behoves education authorities more than ever to pay attention to children of this kind and if necessary they should give more nourishing food to those children who are in receipt of school meals I cannot imagine he goes on, anything more cruel or thoughtless than making children who are weak or feeble go through the formal and exhausting exercises of the gymnasium which physically cause them weariness or pain and which they try to endure rather than enjoy Interest and enjoyment must be the soul of this physical training business and where they are absent schemes to inaugurate them are futile and money spent on them is wasted ' To devise standards of physical fitness which would regulate participation in various types of physical training must be one of the first things to be done and since these standards should include strength and endurance and since many of the exercises have a relation to these and to body weight he suggests the dynamometer and the hanging bar tests to estimate these qualities From experience of these tests I think that any boy under 14 years with a strength of less than 1 7 lb per lb of body weight and an endurance less than 60 seconds on the bar should not be allowed any gymnastics It is in relation to fitness for gymnastic exercises that the individual discrepancies between height strength, and endurance are particularly significant for example the big stout boy may not be as strong as he looks and the strong boy may have poor endurance

Returning to the more general consideration of nutrition Dr Milligan states in conclusion that good nutrition is a complex made up of adequate growth freedom from disease strength and endurance and perhaps other factors In other words there are three main criteria of good nutrition growth as measured by the ratio of weight to height or its modifications or better by the charting of increments as is now done in London functional tests of physical efficiency ; and thirdly clinical estimates by expert observers Resistance to infection is an important feature but one that is almost impossible to estimate All the methods in use are valuable particularly when combined

Two Posters for Welfare Centres

The Association of Maternity and Child Welfare Centres has published two additions to its series of posters[1] The first of these No 11 of the series is a striking design in green and black intended to encourage the use of water as a beverage The wording is as follows How many glasses of water do you drink ? Water gets rid of waste matter from the system Water helps to prevent constipation Water is necessary for parents and children. As no one has a serious financial interest in the claims of water other fluids have ousted it from our hoardings and at the present time an appreciable proportion of poor people drink no water at all as such while the total fluid intake of a larger number is probably insufficient Publicity on the lines of this poster might do much to remedy this dietetic defect

The second poster No 12 is headed Compare the cost of cuts of beef, below which is an outline diagram of a bullock showing the various joints into which the carcass is usually cut On each joint are printed its name its price if English or chilled and its calorie value per pound presumably in the uncooked state The prices are useful for comparison but would need constant revision if they were to be kept up to date The calorie value though interesting tends to mislead unless its meaning is carefully explained to the reader It depends in the case of a joint of meat upon the amount of bone skin and other waste matter present but even more upon the proportion of fat to lean in the joint so that the fattier joints show a higher value than the leaner though they may contain more waste Thus the rump which has little fat and almost no waste has a calorie value of only 796 per pound, whereas the brisket more than a third of which, according to Mrs. Beeton is either waste or is lost in the cooking has a value of 1130 calories More helpful information would be conveyed to the average housewife by stating on each joint the weight of actual eatable matter which each pound will produce when cooked Any necessity for explaining the mystery of calories would thus be avoided

Obstetrical Appointments to L C C Hospitals

At the end of last year an experimental appointment was made of two part-time obstetricians and gynæcologists at four of the London County Council general hospitals—one at Dulwich and St James Hospitals and the other at Lewisham and St Giles's These are responsible for the whole of the obstetric and gynæcological work subject to the administrative control and supervision of the medical superintendent and they are required to visit each hospital whenever necessary The experiment has proved entirely satisfactory and the hospitals and medical services committee in their report to the Council recommend that the scheme should be extended to certain other hospitals with large and growing maternity and gynæcological units The work and responsibility in the unit at St James' Hospital, for example, warrant the employment of a part-time officer for that hospital alone, and it was suggested that Dulwich Hospital should be paired with St Giles's Hospital, and Lewisham Hospital with St Alfege's Hospital, for similar services They considered that the scheme should also be extended to St Mary's Hospital, Islington, and the Archway and Highgate Hospitals At these latter hospitals *and at St James' they recommend, without giving* a reason for the lower salary, that £600 a year be offered, while those holding the posts already created should continue to receive £800 a year, the appointments are to be permanent

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[1] Posters No 11 and 12 Association of Maternity and Child Welfare Centres 117 Piccadilly W 1 39 in by 9 in 1s 6d each

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 10TH, 1937

Notifications —The following cases of infectious disease were notified during the week Small pox, 0, scarlet fever, 1687, diphtheria, 927, enteric fever, 32, pneumonia (primary or influenzal), 532, puerperal fever, 35, puerperal pyrexia, 141, cerebrospinal fever, 28, acute poliomyelitis, 0, acute polio encephalitis, 1, encephalitis lethargica, 8, dysentery, 18, ophthalmia neonatorum, 105 No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on July 16th was 3098 which included Scarlet fever, 749 diphtheria, 786, measles 173 whooping-cough, 490 puerperal fever, 18 mothers (plus 8 babies) encephalitis lethargica, 284, poliomyelitis, 2 At St. Margaret's Hospital there were 25 babies (plus 12 mothers) with ophthalmia neonatorum

Deaths —In 124 great towns, including London, there was no death from small pox or enteric fever, 15 (0) from measles, 3 (2) from scarlet fever, 14 (3) from whooping-cough, 28 (3) from diphtheria, 44 (14) from diarrhœa and enteritis under two years, and 7 (1) from influenza The figures in parentheses are those for London itself

Measles was fatal in 5 cases at Sunderland, 2 at Birmingham The deaths from diphtheria were scattered over 22 great towns none reporting more than 2 Leeds had four deaths from diarrhœa, Bradford 3, no other great town more than 2

The number of stillbirths notified during the week was 269 (corresponding to a rate of 38 per 1000 total births), including 47 in London

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month, his name can be seen later in the half-yearly index

FROM A READER

IV

If you come suddenly upon a strange baby and tickle it, it is likely to cry or whine with disgust But if you take the trouble to ingratiate yourself with it first, by making attractive choo choo noises and by letting the infant get used to your touch, you will probably get a laugh for your tickle An experiment in a Yale laboratory showed that mothers could tickle their own babies into laughter fifteen times as often as a stranger could The most successful joke with these babies—they were all under twelve months—was to swing them as though to throw them into their mother's arms and then rapidly withdraw them, it always worked if the babies were in a playful mood. The first point about these observations is that what is actually an unpleasant stimulus, like tickling, or a disappointment like failing to land in a mother's arms, becomes a matter for laughter if it is taken playfully The second point is that babies laugh at tricks that *are* jokes, although primitive ones Upon these observations and others of his own, Mr Max Eastman has made an eminently satisfactory analysis of the "Enjoyment of Laughter" (London, 1937) In brief, his hypothesis is "Things can be funny only when we are in fun When we are in fun, a peculiar shift of values takes place Pleasant things are still pleasant, but disagreeable things, so long as they are not disagreeable enough to spoil the fun, tend to acquire a pleasant emotional flavour and provoke a laugh"

* * *

This may sound trite, but it is a long way removed from many of the current hypotheses about laughter put forward by eminent psychologists The authors of these alternative hypotheses are readily divided into two schools On the one hand, Bergson propounded, and Ludovici upheld, the notion that laughter is at bottom an expression of hostility or derision, and that we laugh ourselves into a position of superiority On the other, Freud elaborated the idea of laughter as a release of dammed up psychic energy, inhibitions of various kinds providing the dam, a large amount of humour deals with tabooed subjects, and for Freud a smutty story is funny because in it we enjoy the otherwise unmentionable Both Bergson and Freud have one peculiarity in common. Freud denies wit and humour to children, and Bergson, in maintaining (somewhat surprisingly) that laughter is intellectual and incompatible with emotion, excludes the Yale babies from having any right whatsoever to laugh If we accept the reality of babies' laughter, we shall have some difficulty in finding either the object of their Bergsonian derision, or the Freudian inhibitions that are furtively released when they chuckle at their failure to land in their mother's arms

* * *

When adult laughter is considered, the animus, or hostility, idea becomes very plausible Most jokes, actually or by implication, are social, and as such place the audience in an exclusive and withdrawn position which can quite easily be rationalised as a superior one, and from a superior position it is easy to deduce an amused scorn for the object of laughter To take the time-honoured situation of the gentleman slipping on a banana skin The street urchin may conceivably be infused with gladness because the toff, vaguely representative of the wicked capitalist, has come a cropper that temporarily brings him below the level of the proletariat But it is easier to believe with Mr Eastman that he laughs because, unconsciously expecting gents in top hats to walk in an orderly manner and to progress almost unnoticed across his consciousness, he finds this *expectation* suddenly frustrated. Obviously there is such a thing as derisive laughter, but it is difficult to accept derision as fundamental Similarly, release of inhibitions plays a large part at any rate in our enjoyment of risqué jokes, and if one is prepared to postulate a large number of subtle and perhaps inherited taboos, with their consequent inhibitions, even a baby's laugh can be interpreted as release; but release is not obvious in a large number of things we laugh at. Sex taboos have been very much feebler than they are to-day and there is plenty of evidence that jokes about sex and excretion were immoderately enjoyed even in the times when open reference to such matters was common. The victim of a practical joke does not fail to laugh because he hesitates to deride himself or because his inhibitions are not released. The joke is usually played too suddenly for him to get into the playful mood that allows him to find the funny in the not-too unpleasant. At seaside fun fairs there are booths full of contraptions that play practical jokes upon those who walk through them. The unwary find themselves walking on a wobbling stairway or with their skirts blown round their ears by a blast of air from a grating. The onlookers find the predicaments of the victim very funny and the victim, who has paid for the fun of having tricks played on him, is in the right mood and laughs as much as anyone.

Kant got nearer to the street urchin when he defined the laughable as "an expectation that comes to nothing," and Aristotle to the Yale babies when he called it "something ugly or distorted but not unpleasant."

* * *

The frustration taken playfully is Mr. Eastman's "atom" of humour. It may be combined with other things to make the complex "molecule" that constitutes the full joke. As a plain atom he quotes Groucho Marx's threat, "I would horsewhip you, if I had a horse." The mind is led to expect 'whip' at the end of the remark, and gets "horse," which apart from its unexpectedness is a slightly humorous thing in itself. But in "Dante, the famous Yale book end," we have not only the collapse of the expectation raised by the word Dante but a satisfaction arising out of the wreckage, a restoration of ourselves in the neat crack at Yale, at undergraduate furnishings, and at those for whom Dante is a serious intellectual preoccupation. And the following absurd dialogue from an American comedy illustrates that neatness and inevitability contribute as much to the joke as the frustration of logical expectation. A man has lost his memory and is going around trying to find out who he is. He meets a sympathetic girl who says:

"I don't know who I am either. I was left on a door step."

"Maybe you're a bottle of milk."

Wit for Mr. Eastman is a practical joke played on the mind. We laugh at the trick in the witty statement, not at anything funny in the thing stated. Consider Mr. Wells's remark about tourists in continental casinos, "They came to scoff and remained a prey"; and this comment on an actor, "He played the King as though he were in constant fear that somebody else was going to play the ace." Neither remark as such is funny nor does it call to mind a funny situation. But the pun illumines the whole sentence in a flash, and gives as much satisfaction in its rightness as it does laughable shock in its distortion.

* * *

It is impossible in a short paragraph to do justice to Mr. Eastman on irony and sarcasm and the rôle of these two types of understatement in deflating the exaggerated. I find his views on nonsense doubly acceptable. They make sense and they give me a reason for a life-long indifference to the nonsense verse of Edward Lear. I once thought his limericks were to blame for my dislike, for I came to them after savouring the rich variety of his imitators. The lack of invention was depressing, particularly in those which, starting, let us say, with 'There was a young man of Blank Blank,' end with inept and pointless repetition, "That silly young man of Blank Blank."

Good nonsense must be plausible, and I now realise that this is where Lear failed. He is often too fanciful, and creates a picture or situation so nonsensical that it never comes down to earth. Having no relation to the common sense world, its nonsense raises no expectation of sense, and produces no pleasing frustration. Lewis Carroll succeeds superbly because he is always just offering sense, and never quite giving it.

I sometimes dig for buttered rolls
Or set limed twigs for crabs;
I sometimes search the grassy knolls
For wheels of Hansom cabs.

That is not the best Carroll, but it has a first-class plausibility.

* * *

The argument from children's reactions has one serious flaw. Whatever mechanism is responsible for laughter in infancy it may be activated in an entirely different way when adult life is reached, so that the very basis of the comic is changed. It is true that the infant mechanism appears to work with adults, but deductions from adult jokes are vitiated by an inability to separate the essentially funny aspects of the joke from the accidental meaning of the material used in it. We cannot really tell whether we find the drunkard's question, "Is this Piccadilly or is this Thursday?" funny because it's nonsense, or because we are enjoying the sober man's contempt for the drunkard. The essence of a joke, whether verbal or visual, is obscured by the meaning of the situation it embodies. We might find adult jokes free from inessential associations in something wordless like music, for inarticulate sounds have little intellectual content. Unfortunately music is almost entirely unfunny unless the listener has some "programme" at the back of his mind or unless it is suggesting other noises, like the all too human wails of stopped saxophones, or the imitation of a feeding baby in Strauss's Sinfonia Domestica. Apart from these I can think of only two purely musical jokes. Haydn made one in his Surprise Symphony by suddenly interrupting a quiet and modest little tune in the slow movement with a crashing chord for the full orchestra. I have always enjoyed this simple jest, and my enjoyment is greater if the conductor is unobtrusive. Many conductors lessen the surprise by tensing themselves for a terrific sweep of the baton a fraction of a second before the crash actually occurs. But this example is not too convincing, for it has a hundred-year-old tradition of fun behind it. The joke in Lord Berner's fugue for orchestra is more so. I heard it played at a promenade concert to an audience unfamiliar with it. It is an exhilarating piece in C minor and although quite properly fugal the orchestration had a bite and kick that banished the solemnity that fugues often induce. In the penultimate bar trombones, horns, and wood wind went titupping up the chord of C minor leading to an obvious full close in that key and then landed, with staggering unexpectedness and a clash of cymbals, on E natural. There was an immediate burst of laughter from the audience. The change of key was shocking but not shocking enough to displease. We took the shock humorously because the fugue was lively and coming from a composer we knew to be a bit of an enfant terrible, it had put us in the right playful mood The further history of the joke is illuminating Two years later the fugue was played again, and the programme annotator unwisely printed the story of the key change that had produced "spontaneous laughter" from the first audience The joke was so simple that nearly all its point was gone when everyone knew what was coming, and at the end one heard only a few conscientious chuckles This is an adult joke that approximates very closely to the simple jokes of a baby, and in all its aspects bears out Mr Eastman's hypothesis

* * *

Arnold Bennett once said that no real anthology of limericks could ever be published, for the best were unprintable If I have quarried mainly among Mr Eastman's jokes, it is because they can be printed. The best I can think of could not, either for reasons th play straight into Freud's hands or because I cann convey in print the inflections and nuances th make them funny But of my final illustrati enough survives the translation into print to gi Mr Eastman priority over his fellow analysts raises an expectation, frustrates it, and yet gives measure of serious satisfaction. To my mind it ris superior to Mr Eastman's contention that to analy a joke, even beforehand, is to kill it dead.

About a dozen men walked into the booking h of a small Lancashire station. They were dressed black suits and black bowler hats, a few carri wreaths of white flowers They were led by a lar man with a red face and drooping moustache, wl shepherded them in silence on to the platform, ar then walked to the ticket office and said, "Ah wa twelve cheeap returns to Bury, please—Pleasu Party"

CORRESPONDENCE

THE REVISED MEDICAL CURRICULUM

To the Editor of THE LANCET

SIR,—The replies to my letter of June 26th in your columns have been mostly from deans of medical schools, viewing the revised curriculum with essential complacency, an attitude founded upon their agreement which may be assumed, with their first spokesman, Prof Clark, who declares roundly that "it is much better that medical schools should lead instead of having to be driven by, the G M C " and he goes on to say, "it is perhaps unfortunate that the G M C has found it necessary to attempt the direction of medical education by over detailed instructions" as to courses of study

On this interpretation of the complete independence of the medical schools the revision of the curriculum by any outside authority, whether it be the G M C or the universities or the licensing bodies, is clearly supererogatory This lowly estimate of the educational functions of the G M C seems to conflict with Section 20 of the *Medical Act of 1858*, and I submit does not agree with the public conviction that the G M C is charged by Parliament precisely with the duty which Prof Clark questions—namely, the direction of medical education—a duty which the title The General Council of *Medical Education*, &c, would seem to imply An important extension of this duty was made by the Medical Act of 1886, which required the Council to inspect examinations and to report to the Privy Council any deficiency noted The view apparently entertained by Prof Clark and others that the "resolutions" of the G M C are merely pious aspirations which the medical schools may follow or ignore as they see fit, should not I submit receive any sanction from the G M C, and if accepted by it, would be a clear betrayal of the responsibility entrusted to it by a series of Acts of Parliament

My statement regarding the restriction of opportunity for medical study to the relatively well to do, denied by Prof Clark is confirmed by the evidence of figures contributed by the University Grants Committee quoted in your issue of July 10th Prof Leathes seems to think it is a sufficient answer to me to say that because in the London medical schools (as he alleges on insufficient evidence) it has been customary for 50 years for students to pursue their clinical studies throughout the long vacation no difference is created by the resolution which *imposes* that continuous study on *all* the medical schools within the jurisdiction of the G M C The Londo schools are more and more restricting their entry university students, in the last report of the Unive sity Grants Committee the percentage of studen reading for university degrees varied from 93 per cen to 50, the general average in the schools being 7 My letter dealt with the minimal qualification, an that description does not apply to university degree Prof Leathes is of course quite correct in his co tention that five academic years of study cannot taken in less than 57 months, the difference whic follows from the new resolutions lies in the new oblig tion, rendered necessary by the growth of the cu riculum, to spend the vacations of the clinical perio in "continuous study," and the impossibility getting the subjects of the preclinical period into tw academic years will inevitably result in the tran formation of these years also into calendar yea by the appropriation of their long vacations

Prof Leathes justifies the present enlargement the curriculum by asking whether it is not essentia for the budding practitioner to know something o the new subjects I cited That is precisely th attitude which I deprecated, the new curriculu intensifies the evil of overloading, and the breaking point, I submit, must come soon, if it has not alread come

I am, Sir, yours faithfully,

E GRAHAM LITTLE

House of Commons July 19th

ORCHIDECTOMY IN PSEUDO-HERMAPHRODITISM

To the Editor of THE LANCET

SIR,—In your issue of July 3rd Dr E L Holden Ellis reports a case of pseudo hermaphroditism and discusses the treatment of this interesting condition The patient was a child of 7, externally apparently a female but possessed of two veritable testes and epididymides, discovered accidentally during the exploration of a supposed bilateral inguinal hernia As almost always happens in such cases, the operating surgeon could not resist the temptation offered by the offending organs He removed them In commenting on this, Dr Holden Ellis writes as follows "It might be considered that the bilateral orchidectomy was unwarranted and too radical a procedure, but it is in accordance with the teaching of *Blair Bell* (1935) that when the external genitalia and secondary sex characteristics are feminine, and the child has been brought up as a girl removal of the testes is correct practice Great as is my respect for the authority quoted I must beg to differ if this really represented his opinion To my way of thinking it is based on three misconceptions—three misconceptions that are extraordinarily prevalent. The first of these is that the only function of the gonads is that of determining the secondary sex characteristics the second is that these secondary sex characteristics arise simply as the result of the action of sex hormones on a neutral body and the third is that if in such a case as that noted by Dr Holden Ellis the testicles are left male characteristics will inevitably appear later

Pseudo hermaphroditism of the kind described in this article is almost certainly explained by a failure on the part of the body to respond to male hormones in the direction of maleness Because of this failure the body is carried by its natural bias in the direction of femaleness What right therefore has Dr Holden Ellis to presume that in later years the child would have developed maleness? Certainly this has been known to happen but more often than not the failure to react to male hormone persists through life Recently Dr Harold Chapple reported a parallel case in an adult woman and I myself have been privileged to investigate with Dr Wiesner a similar instance of pseudo hermaphroditism in what appeared to be a good looking girl of 25 Unfortunately the surgeon had acted on the principles advocated by Dr Holden Ellis and had removed both testicles with the result that the good looking girl rapidly put on some two stone in weight. Only as a result of a year's work and the administration of much anterior pituitary and thyroid has the upset in metabolism produced by castration been to some extent readjusted

For this if no other reason I would suggest that immediate castration is *not* the correct treatment for the type of case described in Dr Holden Ellis's article In the majority of cases maleness will never develop and by retaining gonads the patient's metabolism will not be altered Should however the case prove exceptional and signs of maleness later begin to develop then castration can be carried out

I am Sir yours faithfully

KENNETH WALKER.

Harley street July 13th.

PASTORAL PSYCHOTHERAPY

To the Editor of THE LANCET

SIR,—If Dr Clifford Allen and those who feel with him will bring to the problem of the Guild of Psychotherapy that detached unemotional, scientific point of view which he ascribes to the qualified physician, the misunderstandings underlying his letter can be cleared up without difficulty When I first heard of the proposed Guild I made just this same objection: that the clergy could not adopt such a detached point of view; but closer contact with the Guild's promoters has convinced me that some at least of the clergy are both able and eager to do so I can assure Dr Allen that no person who is unable to take this point of view will be eligible for membership of the Guild.

But the crux of the whole misunderstanding is the meaning which is to be attached to the word psychotherapy I had believed without much consideration of the subject that it was the Greek for a cure of souls Conversation with a number of medical men and women on the subject of the Guild has however revealed to me that there are two distinct groups of psychotherapists and that neither group fully understands the work and outlook of the other There are of course many with a foot in both camps but I am sure that I am correct in saying that the two extremes represent two totally incompatible points of view Perhaps for clarity I may adopt the clumsy phrases psychotherapy (medical) and psychotherapy (spiritual)

Psychotherapy (medical) is practised in mental hospitals and out-patient clinics and in its most clear-cut form it is well represented by the following quotation from a personal letter recently sent to me:

> 'In the great majority of cases sent to me as entirely psychological if a careful investigation is made, it will be found that they have infected teeth or sinusitis, or some disturbance of the digestive organs or infection of the throat or tonsils they require weeks and often months of medical treatment and frequently no psychological treatment at all When their infections have been thoroughly treated they can often deal with the psychological complications themselves

It would obviously be highly improper were clergy, or any other lay person, to encroach on this very real and important field the promoters of the Guild would be as shocked as anyone else at such a proposal. To such psychotherapy can well be applied Dr Allen's phrase religion in its proper sphere but that sphere certainly is not '—here

The other kind of psychotherapy is very different It may be illustrated by a quotation from C G Jung's recent book

> During the past thirty years people from all the civilised countries of the earth have consulted me I have treated many hundreds of patients Among all my patients in the second half of life—that is to say over 35—there has not been one whose problem in the last resort was not that of finding a religious outlook on life It is safe to say that every one of them fell ill because he had lost that which the living religions of every age have given to their followers and none of them has been really healed who did not regain his religious outlook

Of such 'psychotherapy many psychotherapists (medical) know nothing whatever As Sir Walter Langdon Brown said recently the spiritual value of Jung's philosophy is still but dimly comprehended (Of course I do not imply that psychotherapy (spiritual) is limited to Jungians that is by no means the case It is to treatment of this kind that pastoral psychotherapy refers If anyone can suggest another term for it I believe the Guild would gladly adopt the suggestion In my opinion, however psychotherapy is properly applied to this psychotherapy (spiritual) and the term psychiatry should be used for psychotherapy (medical) Psychotherapy (spiritual) may be defined as an attempt to facilitate the normal development of the human soul.

The practitioners of psychotherapy (spiritual) do not deal with the bodies of their patients they seek the aid of general practitioner or specialist in coöperation, just as an oculist or gynæcologist might even though they have the background of medical qualification and general practice Moreover they habitually send to psychotherapists (medical) (or psychiatrists) cases which require psychotherapy (medical) and are unsuited to their own technique They do not however subscribe to the *reductio ad absurdum* which I have actually encountered of saying that every person who has a spiritual difficulty should be treated in a mental hospital or psychiatrist's consulting room! To such a point of view I would apply a paraphrase of Dr Allen's remark and say I am not hostile to medicine in its proper sphere but that sphere is not the confessional, the vestry, or the minister's study." Although some such cases now go for help to the consulting room of the psychotherapist (spiritual), many more still go to the vestry, and will continue to do so. No amount of medical objection will prevent the minister from trying to help them; it is his immemorial duty.

Cannot the partisans in this matter admit that the type of case which each of them sees and treats is not the only type of case? Both kinds of treatment are indispensable. The object of the Guild is to define very clearly the borderline between psychotherapy (medical) and psychotherapy (spiritual), and to make sure that the clergy who become its members keep well on their own side of that line. I can assure Dr. Allen that the medical men and women who support the Guild (most of them to my personal knowledge, and probably in fact all of them) do so after careful consideration, and are acting from profound conviction that the cause is a right one. If Dr. Allen were to found a guild for the collection and destruction of used tram tickets and cigarette cartons, he would probably feel a little sore if he were vigorously attacked for encouraging litter in the streets. That, I imagine, is what the Guild must feel when accused of "encouraging an incursion of the unqualified into the realm of medical practice." Members of the Guild will give a solemn undertaking to refer the slightest physical symptom to a doctor, and not to undertake a prolonged course of interviews unless there has been a "all clear" on the physical side as a result of thorough medical overhaul.

With the future of the Guild I am not greatly concerned. If it is (as I believe at present) a good thing, it can afford to ignore a "boycott" by the medical profession. My real concern is the possibility that the medical profession will once again lay itself open to a charge of acting like the dog in the manger trying to prevent others from doing important work which most doctors are, by temperament and training, quite unfitted to do themselves.

I am, Sir, yours faithfully,
KATHLEEN KITCHIN.

Wimpole-street, W., July 19th.

To the Editor of THE LANCET

SIR,—Dr. Allen's letter serves as a timely reminder and warning of the fast growing danger of lay encroachment in psychological medicine. When it is remembered that, according to a recent calculation, between 30 and 40 per cent. of all sickness is considered to be attributable to psychogenic causes the extent of the danger may be appreciated. At the same time it must be admitted that justification of a sort does exist for this departure, for is it not the expressed opinion of a certain number of medical psychologists that scientific psychotherapy in mental maladies is not feasible or, at least, is not the only (or possibly best) method that can or should be applied?

It is a situation unique, I imagine, in modern medicine and ought to impress us all with the need carefully to distinguish the scientific from the empirical or non-scientific methods of treatment in this department of medicine. In an article which appeared in THE LANCET some months ago I endeavoured to emphasise the importance of this point and Dr. Allen's letter makes it very evident that firm adherence to scientific principles was never more necessary than it is in psychotherapy to-day.

I am, Sir, yours faithfully,
FREDERICK DILLON.

Wimpole-street, W., July 19th.

GASTRIC DISORDERS IN TRANSPORT WORKERS

CLINICAL EVIDENCE AND STATISTICAL PROOF

To the Editor of THE LANCET

SIR,—The inquiry that Dr. Bradford Hill has made for the Industrial Health Research Board (reviewed in your issue of July 10th, p. 97) shows that omnibus drivers and conductors (in spite of a low "all causes" morbidity experience) suffered from an excessive amount of "serious" gastric disorder during the period under survey (1933–35). I do not propose to enter into a discussion of the sociological and industrial effects which may be expected to follow this finding. What appears to me the most important conclusion—from a purely medical point of view—is that the report demonstrates the reliability of clinical observation and the validity of clinical inference. Whenever an "inference" is supported either by a general consensus of clinical opinion or is widely held amongst "specialists," it ought to be accepted unless it can be disproved. At the present time accumulated clinical experience is accounted of little value unless it can be supported up to the hilt by objective research; whereas the onus of the disproof of clinical intuition ought rather to lie upon those who deny the conclusions of clinical experience. If more facilities were to be provided for research this matter might be of less serious social importance, but in the present case, for example, Dr. Hill's report comes years after physicians, surgeons, and general practitioners became satisfied that road transport workers were suffering with undue frequency and severity from gastric disorders. To reject accumulated clinical experience, even if statisticians can pick holes in the significance and comparability of the material that can be objectively presented, is not necessarily scientific. If an increasing number of transport workers are admitted to a number of hospitals suffering from a particular disease, and if experienced physicians can find no other relevant cause for that increase, the presumption is that the disease has an important industrial factor in its ætiology. It is not always realised that it is as hard to prove the connexion between disease and occupation as it may be to "disprove" it; wherever a presumption can be shown to exist, surely the onus to "disprove" that presumption should lie upon those who assert that the occupation question is "healthy."

In the present instance, after great trouble and some delay, it was decided that the sickness experience of tramway workers in London could fairly be compared with that of the omnibus workers. Anyone who has had patients amongst tramway workers or has watched them taking hurried snacks on the road will realise that such a comparison was unlikely to reveal the whole of the truth about gastric disorders amongst omnibus workers. Tramway workers also most probably have a high gastric disorder experience.

As a result of a painstaking and brilliant analysis, Dr. Hill reached certain general conclusions which demonstrate beyond reasonable question the validity of clinical observation and inference as applied to this particular problem, and I hope that his report will be studied by the profession as a whole. It now remains to discuss what are the important factors which together produce this important group of industrially caused illnesses.

I am, Sir, yours faithfully,
HOWARD E. COLLIER.

Dept. of Industrial Hygiene and Medicine,
Birmingham, July 15th.

THE OVER TREATMENT OF GONORRHŒA

To the Editor of THE LANCET

SIR,—Although it is a month since the letters from Dr Hanschell and Mr King appeared in your journal I must beg space even after this interval to answer them My excuse for the delay is that I was still hoping to hear justification for the methods of treatment in vogue rather than for the personnel which uses them

I enjoyed Dr Hanschell s staccato wit, but feel that he and I must read things differently My original letter was largely concerned with general principles illustrated—misguidedly I now find—by one or two particular examples to bring it down to earth. Were these as he implies, the gist of my letter it would indeed have been piffling There is more of personalities than of particulars in Dr Hanschell s letter but there is a sentence in his first paragraph which shows the gulf between us and I cannot leave it unchallenged. He says A clinic medical officer is rightly concerned rather about the *under* treatment of gonorrhœa, &c &c This reveals an attitude of mind which affects the management of many diseases besides gonorrhœa It implies that it is only by sedulous activity that the disease can be cured. There is always a danger that this attitude of mind should pervade our profession (since patients demand omnipotence) to the detriment of clear thinking Too often oblivious of pathology it is responsible for wholesale panaceas for example blood transfusion and is a menace to the proper scientific training of students. Those of us who are responsible for their education have little or no control over the teaching of students in venereal departments and the present instruction in this disease should make us uneasy both on general and particular grounds

May I restate my opinion which neither Dr Hanschell s nor Mr King's letters seriously opposed that the present methods of treating gonorrhœa in the male are fundamentally wrong and quite unlike any other established surgical procedure ?

I am Sir yours faithfully

Queen Anne-street W July 21st M. F NICHOLLS

THE LANCET 100 YEARS AGO

July 22nd, 1837 *p* 636

From a review of Inflammation and Perforative Ulceration of the Cœcum and of the Appendix Vermiformis Cœci By JOHN BURNE M.D London: Longman and Co 1837

Dr Burne has published eight cases which although they may be valuable confirmations of the views of the French pathologist (Dupuytren), afford no ground for ranking the author of the work before us as an original speculator instead of an honest chronicler On the subject of his cases he thus writes —

> The inflammation of which I am about to speak has in every case been symptomatic of some mechanical exciting cause as the lodgment of undigested food of fruit-stones, or of concretions which the structure of the cœcum and appendix favour The peculiarities of this inflammation are the marked and fixed local signs the invasion of them without any obvious cause while the patient was in health their gradual development; their obstinacy; the late supervention of the febrile *movement.* If life be prolonged there may be discovered about the tenth day a circumscribed emphysematous tumour presenting anteriorly or posteriorly in the right inguinal region which will prove to be a fæcal abscess making its way to the surface of the body Ulcerative perforation of the cœcum will have taken place: if in the anterior part adhesive inflammation will have brought the abscess to the surface without invasion of the peritoneal bag; if in the posterior part where uncovered by the peritoneum the abscess will tend upwards and backwards to the outer edge of the quadratus lumborum, the least resisting part of the lumbar parietes This abscess may discharge itself and the patient do well or nature may sink under the effort

The diagnosis of these cœcum cases (the reviewer comments) is determined with precision by the seat the tenderness the tension and the course and character of the symptoms Any practitioner who can distinguish a boil from an erysipelas or a door nail from a church steeple cannot mistake a local phlegmon of the cæcum in any stage for a general enteritis or peritonitis

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdrs A. W Gunn M V O to *Victory* for R M Infirmary Portsmouth P J A The O Rourke to *President* and A de B Joyce to *Excellent*

Surg Lt Comdr J J Keevil to be Surg Comdr

Surg Lt Comdrs G A Miller to *President* T A Cochrane to *Drake* for R N B Devonport and G Ronson to *Victory* for R N.B Portsmouth

Surg Lt Comdr (D) G Baker to *Pembroke* for R.N B

Surg Lts C J Mullen to Coventry; L G Yendoll to *Pembroke* for R.N Hosp Chatham G C Denny to *Vernon* and R M. Kirkwood to *Victory* for R.N Hosp Haslar

Surg Lt (D) H. P L Rhodes to *Resolution*

ROYAL NAVAL VOLUNTEER RESERVE

P C Barkla entered as Proby Surg Lt and attached to List I of East Scottish Division

ROYAL ARMY MEDICAL CORPS

To be Bt Lt Cols Maj E B Marsh M C and Maj E C Linton (Substituted for notice in THE LANCET of July 10th)

TERRITORIAL ARMY

Lts C G Roberts G A F Holloway and W A. Bellamy to be Capts

N N Porterfield (late Lt New Zealand Mil. Forces) to be Lt

Supernumary for Service with O T C—Capt W L Lamb from R.A M C Gen List to be Capt for serv with Edinburgh Univ Contgt Sen. Div

ROYAL AIR FORCE

Flight Lts V H. Tompkins to Princess Mary s R.A.F Hosp Halton L. MacKay to Medical Training Depôt Halton and H F Harvey to No. 9 Flying Training School Hullavington

Flying Offrs J H L Newnham and P A. Wilkinson to Medical Training Depôt Halton

Flying Offr P A Wilkinson ceases to be seconded to the Derbyshire Royal Infirmary

INDIAN MEDICAL SERVICE

The undermentioned appt has been made in India — *A.D.M.S*—Col W L. Watson O.B.E

NEW MATERNITY HOME AT WORTHING —The Duke of Norfolk has opened a new maternity home at the Worthing Hospital of which he is president The building with equipment has cost £14 000 of which £10 000 has been provided by the townspeople and £4000 by the West Sussex county council and the Worthing town council. There are ten beds five to be used by the councils and five to be used as private beds

PANEL AND CONTRACT PRACTICE

THE FOURTH VALUATION

THE late Government Actuary, Sir Alfred Watson, died in 1936 when the Fourth Valuation of the assets and liabilities of the approved societies, which he had supervised throughout, was nearing completion. Those concerned with our system of National Health Insurance will not need to be reminded how much it owes to his services during the last quarter of a century. The establishment and maintenance on a sound financial basis of this integral branch of the social services rest largely upon his activities and foresight. A tribute to his work in this field—"work which perhaps he had nearest to his heart"—is paid to him by Mr. G. S. W. Epps, his successor as Government Actuary, in a conclusion to his report on the Fourth Valuation which has just been published.[1]

AN INCREASED SURPLUS

A good deal of this report is technical and rather difficult of comprehension by those who are, actuarially speaking, mere laymen. But it reaches conclusions that are clearly set out and are of much interest to those who approach National Health Insurance from other viewpoints. The outstanding feature of the Fourth Valuation is the fact that the aggregate net surplus now disclosed is slightly larger than that found on the last occasion[2]—namely, £36,700,000 as against £35,800,000. This is a remarkable result in view of the heavy strain due to unemployment during the years under review. (In carrying out the valuation of some 7000 approved societies and branches it is essential in the interests of economy and administrative convenience that the work should be continuous; the valuation dates therefore range over the years 1931 to 1934, the great majority of the membership being dealt with in 1932 and 1933.) The main sources of surplus during the intervaluation period have been the favourable experience in respect of sickness and maternity benefits and the amount of excess interest earnings. On the other hand there has been a heavy loss of contribution income due to unemployment and a strain due to the cost of disablement benefit having exceeded the provision made for it.

The total number of members covered by this valuation was close on 17 millions. The figures show an increase of 4·1 per cent. in the number of insured men and 2·3 per cent. in the number of insured women since the Third Valuation, due in part to the general increase in the population at ages 16–65 and in part to the increased popularity of voluntary insurance. The latter has led a substantial number of persons in excepted employment to become voluntary contributors under the Contributory Pension Act of 1929, and has also resulted in the retention in insurance of many employed persons who would otherwise have ceased to be insured on reaching the remuneration limit.

Of the 17 million insured persons no less than 87 per cent. are in societies which as a result of the valuation are able to provide additional benefits—i.e., over and above the basic benefits—out of disposable surpluses. Also, as on previous occasions, a considerable part of the surplus has been carried forward to strengthen the reserves of the societies concerned.

In total, surpluses were found in 6435 societies and branches, comprising 15,473,186 members with an average surplus of £2·42 per member; in 228 cases, with a membership of 812,208, the assets and liabilities were equal; in 292, with a membership of 667,752 deficiencies were recorded, with an average deficiency of £1·11 per member. In other words, societies insuring 91·3 per cent. of the insured population are in the possession of surplus (compared with 92·9 at the previous valuation), 3·9 per cent. have a deficiency, and 4·8 per cent. have equal assets and liabilities. Consideration of the results for the separate countries, however, shows that whereas in England the proportion of insured persons in societies with surpluses is 94 per cent. and in Scotland 80 per cent., the proportions in Wales and in Northern Ireland are only 46 and 50 per cent. Of those belonging to Welsh societies 41 per cent. are in societies with deficiencies, and even those societies with a surplus have on the average an amount much below that of the other countries. These unfavourable results are to be attributed in great measure to occupational conditions.

ADDITIONAL BENEFITS

In a relatively small number of instances it has been found necessary to reserve the greater part, sometimes the whole, of the surplus, accumulated under favourable conditions in the past, in order to protect the funds against a probable excess of claims in the future. In most cases it has been possible to release for distribution a substantial part of the surplus. In fact, a disposable surplus has been certified in 5857 societies, or branches, with 14,733,621 members; the aggregate surplus was £37,001,865 of which £20,105,033, or 54 per cent., was declared disposable and the remainder carried forward. In 578 units with surpluses totalling £482,821 the circumstances were such that no part of the surplus could be certified as disposable. In all 2,219,525 members, or roughly 1 in 8, must be without additional benefits. In other words the proportions of insured persons entitled to additional benefits are 88 per cent. for insured men and 85 per cent. for insured women. It seems that these persons could be provided with additions to the statutory benefits amounting on the average to an increase of about 20 per cent. in the normal rates of sickness and disablement benefits, and a somewhat smaller percentage addition to maternity benefit, for the five years which is the normal period of additional benefit schemes, together with treatment benefits costing, on the average, about 4s. per member per annum. For nearly nine-tenths of the insured population there has, therefore, been little change on the whole in the prospect of additional benefits or in the financial position generally as measured by the average disposable surplus per member.

THE SICKNESS AND DISABLEMENT EXPERIENCES

During the period between the last and the present valuations the actual expenditure of the societies on sickness and disablement benefits may be compared with the amounts provided for on the basis of the valuation prescribed. For men the "expected" rates are estimated to be in close accordance with the rates of sickness shown by the Manchester Unity Experience of 1893–97, and this involves no change from the rates employed in the Third Valuation. For women the actuarial basis was revised in connexion with the Act of 1032 the new basis being approximately the experience in 1028–30 With sickness the actual cost is 10 per cent below the expected payments for men 2 per cent below for women With disablement on the other hand the actual cost is above the expected payments by 8 per cent for men and 9 per cent for women The Government Actuary concludes that considering the experience of the inter valuation period as a whole the claims of men appear to be not unsatisfactory if the excess of 8 per cent in the cost of disablement benefits be set off against the margin of 10 per cent on *sickness benefit* For women the position is less satisfactory in spite of the changed basis consequent upon the unsound financial position revealed at the *Third Valuation* No profits can be regarded as *accruing* in respect of sickness benefit whilst the claims for disablement benefit are as stated above 9 per cent *in excess of* the new and higher standard

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[1] Report by the Government Actuary on the Fourth Valuation of the Assets and Liabilities of Approved Societies. Cmd. 5406. H.M. Stationery Office. 1937. Pp. 111. 2s.

[2] See *Lancet*, 1931, 2, 1423.

Analysis of the annual cost of benefits shows a less satisfactory position *In 1020 the payments* were uniformly in excess of the expected amounts due no doubt in part to the widespread influenza epidemic of that year In the *following* year the payments for sickness periods fell appreciably *below* the expected amounts for men and a little below for women. Since then they have remained below the expected values though showing a slight annual rise With disablement benefit, however although the claims fell slightly in the middle of the inter valuation *period* 1931 owing *mainly it is presumed* to administrative action following on a survey of a sample of benefit claims by the medical staffs of the responsible Departments in 1930 they showed a definite *rise* in the later years By 1933 the disablement benefit claims of both sexes had reached a figure 13 per cent in excess of the provision This the Government Actuary regards as a disquieting tendency which to judge from such information as is available on the disablement benefit expenditure of later years has continued since the valuation date It cannot be regarded as satisfactorily offset by the continuance of a favourable experience in the claims for sickness benefit

THE GOVERNMENT ACTUARY S CONCLUSIONS

It *is concluded* that to maintain the financial soundness of the system constant care is essential by those responsible for the certification and supervision *of claims* The attention of the National Health Insurance Joint Committee was drawn to this matter some time ago and they have undertaken a comprehensive investigation into the causes of the rising cost of disablement benefit

As regards the *position* of women which gave cause for grave *anxiety* five years ago the situation has been fundamentally altered by the measures taken in the Act of 1032 to restore equivalence between benefits and *contributions* But it is important to remember that the new scales of benefit can only be supported by the existing contributions if the rate of *sickness is maintained* at a level 10 per cent lower on average than that of the years 1028–30 The improvement in women s claims—more especially among married women—is definitely encouraging though here again the Government Actuary draws attention to the upward trend of the disablement experience He concludes that it is too early yet to form a definite judgment as to the adequacy of the revised sickness standard in relation to the liabilities for benefits at the rates as now fixed

Finally in considering the prospects of the societies regard must be had to the financial effect of the amending Act of 1935 That Act is estimated to have restored medical benefit to about 200 000 persons who having suffered from prolonged unemployment had ceased to be entitled to any health benefits and it also provided for the retention of a similar class of persons in the future so long as they remain unable to obtain employment The cost of this benefit was provided partly by a new State grant and partly by a levy on the contributions of all societies (so that societies whose members are in regular employment assist those whose members are less fortunate) The rights of unemployed persons generally were also materially enlarged On the basis of the average level of unemployment during the quinquennium ended March 1034 it is estimated that the residual deficiency due to shortage of contributions would be in the neighbourhood of £1 500 000 per annum Subsequently there has been a substantial fall in the volume of unemployment materially lightening the burden on societies but the Government Actuary gives a word of warning to the effect that the shortage of contributions due to unemployment is only partially offset by the available provision, leaving a residual loss of substantial amount which must necessarily retard the growth of surpluses generally

Coordination of Medical Services

At a recent meeting of the Association of Trade Union Approved Societies attention was given to the medical treatment of insured persons and it was decided to call for the coordination of all medical services paid for wholly or partly out of public funds and to ask the Government to hold an inquiry into the subject. One speaker having pressed for more collaboration between the medical profession and the association by which means alone proper treatment could be ensured for their workers went on to suggest that every doctor before being allowed to treat insured patients should have some actual workshop experience Otherwise how could he certify that a man or woman was fit for work ?

A Cheshire Testimonial

The Cheshire panel committee have accorded their honorary secretary Dr L J Picton a gift of £250 in appreciation of his continued labour on behalf of the dignity and welfare of the medical practitioners of the county palatine of Chester

Chewing gum

The Manchester insurance committee after consultation with the panel committee has recovered from a practitioner the sum of 8*d.* the cost of chewing gum ordered for an insured patient The insurance committee took the view that this substance is a sweetmeat which would not ordinarily be a drug forming part of medical benefit, but as it might have been ordered in this particular instance for a therapeutic purpose the matter was one for determination by the panel committee The doctor stated that the chewing gum was prescribed not as a drug but rather as a mechanical device for the stimulation of physiological function as the patient had an obstruction of the submaxillary duct with painful distention of the gland, and the gum stimulated salivation. The panel committee decided that though the substance was properly prescribed for a therapeutic purpose they could not consider it to be a drug forming part of medical benefit

OBITUARY

SIR THOMAS MYLES, C.B., M.D. Dubl., F.R.C.S.I.

THE death of Sir Thomas Myles on July 14th in his eighty first year removes one of the best known personalities in the medical profession in Ireland. A native of Limerick and educated at Trinity College, Dublin, he obtained his medical qualifications in 1881. In the same year he was appointed resident surgeon in Dr. Steevens' Hospital, which post he held until 1884. It fell to his lot in May, 1882, as resident surgeon, to receive the bodies of Lord Frederick Cavendish and Mr. Burke, the victims of the Phœnix Park murders, and a year or so later, as acting medical officer to H.M. Prison at Kilmainham, he had to attend the executions of some of those who had committed the murders. In 1885 Myles was appointed one of the visiting surgeons to Jervis street Hospital, from which five years later he migrated to the Richmond Hospital where the remainder of his active professional life was spent. He retired from his hospital work and from surgical practice some seven or eight years ago, but remained an active governor of the hospital. In 1889 he had taken the degree of M.D. at Dublin University, while in 1885 he had been admitted a fellow of the Royal College of Surgeons in Ireland. In 1889 he was appointed professor of pathology in the school of the college. In 1900 he was elected president, and at the conclusion of his term of office he received a knighthood. In recognition of his distinguished professional career he was in 1900 made an honorary burgess of his native city of Limerick. In 1910 he was appointed honorary surgeon in Ireland to King George V. During the late war he was consulting surgeon to the Forces in Ireland with the rank of colonel. For several years at intervals he has represented his college on the General Medical Council.

"For the last fifty years," writes our Dublin correspondent, "Myles has been one of the outstanding figures in Irish surgery. He was always a general surgeon, not given to the development of any specialty, but ready for any emergency that might come his way. Educated before surgery became as fine an art as it is at present, and when speed was regarded as one of the greatest of surgical virtues, in his most active days Myles was said to operate with a stop watch at hand and to aim at a steady improvement of his 'records.' However that may be, he was a surgeon of great nerve and of undoubted skill, practical in his outlook and not unduly concerned with theories. He was for many years the most attractive surgical teacher in Dublin. In his young days he had been a successful 'grinder' and his skill never left him. Old Dublin students for a generation immediately before the Great War will remember his marvellous skill in illustrating his points, choosing, where he could, quotations from the Bible and Shakespeare, his picturesque but life like descriptions, and his power of witty repartee. To his out patient mornings flocked the students from all the Dublin schools and hospitals. Busy as was his professional life Myles had many outside interests. In his younger days a powerful football player and boxer, he never lost his interest in these sports. He was an active yachtsman and he followed this sport up to last season, it is only three years since he was wrecked on the coast on the Isle of Man while sailing his own yacht.

"Myles was—in the days when dining out was still a popular pastime in Dublin—one of the most persistent of diners out, and no more sociable companion ever sat at a dinner table. He was an excellent conversationalist and the best of raconteurs, and no table at which he sat was dull. Of late years he was president of a dining club—the Companions of St. Patrick. In his younger days he took more active interest in politics than was usual in a professional man. He was a warm admirer of Parnell, and throughout his life was a sincere Nationalist, and never admitted that there was any opposition between his Nationalism and his equally strong Imperialism. Speaking at a public meeting during the South African war of 37 years ago, though an apt speaker, he made a bull which became famous, 'How long,' he asked, 'is Ireland alone among the nations of the Empire going to stand idle with her arms folded and her hands in her pockets ?' "

The following tribute comes from a colleague: "The countless men who regarded Sir Thomas Myles with awe and affection when they were medical students retained those feelings to an even greater extent when, full of years and experience, they again came under his influence. The commanding appearance, the ready wit, the dramatic eloquence, the untiring energy—all tended to inspire this hero worship. All his experiences of men, all his knowledge of the world, were poured out for the benefit of the student. Those who listened learned not only surgery but the humanities, learned not only of life but of literature. Those who knew him best recognised an unswerving loyalty to his friends, to their children, and to their children's children, an utter devotion to his hospital and to the poor patients attending it, a deep personal interest in the students and their welfare. He was at home with the highest, as the lowest were at home with him."

Lady Myles, who survives him, is the daughter of the Rev. George Ayres, canon of St. Patrick's, Dublin. They were married in 1888.

WILLIAM LANG, F.R.C.S. Eng.

MR. Lang's professional life was based on three hospitals—the London, Moorfields, and the Middlesex. He entered the London in 1870, at the age of eighteen, and four years later qualified as M.R.C.S. He became house physician and house surgeon, and subsequently demonstrator of anatomy and physiology in the medical college. Inspired by J. E. Adams, then surgeon to the hospital, he took up ophthalmology, and after securing his fellowship at the Royal College of Surgeons, he joined the staff of the Royal London Ophthalmic Hospital at Moorfields when Adams left it in 1884. Appointment as ophthalmic surgeon to the Middlesex Hospital followed, and in 1896 he published a book on "The Methodical Examination of the Eye," a work for students which reflected his skill as a teacher. He contributed much to the journals of his specialty and to the Royal London Ophthalmic Hospital reports, and became president of the ophthalmological section of the Royal Society of Medicine. After 28 years' service he left the active staff of Moorfields in 1912, and of the Middlesex during the late war. For a time, however, he continued hospital work as ophthalmic surgeon to the King George V Hospital, Ilford.

The son of Isaac Lang, William Lang was born at Exeter in 1852 and died at his home in London on July 13th. He was twice married, and had a son and daughter. But his son, Basil Lang, who followed his father on the staff of Moorfields, died before him in 1928.

INDUSTRIAL ACCIDENTS AND DISEASES IN 1936

A SUBSTANTIAL increase in the total number of reported *accidents* in factories and also in fatal accidents during 1936 is recorded by the chief inspector in his annual report.[1] He attributes the increase to the larger number of workers employed, the increased speed of production, the more widespread mechanisation of processes, and the re-employment of persons who because they had been inactive for long periods had lost temporarily some of their skill and alertness. Many trivial accidents became reportable —after three days absence from work—on account of the failure of the injured persons to seek early first-aid treatment, and it is regrettable to note that large numbers of accidents could have been avoided by ordinary care and foresight. Mr Macklin, in the chapter on Safety, remarks that nothing seems to overcome the British worker's dislike of what he considers timidity or fussiness. The old school accept industrial risks as inevitable, while with boys a contempt for danger is part of their heritage. It is clear that much has to be done to teach employers and workers alike the absurdity of an attitude of false heroism, but it is still more important to make all machinery safe and to eliminate the human element as far as possible. It would be a retrograde step in accident prevention to place too much reliance on the comfortable doctrine of accident proneness and on the innate heroism of man. In a chapter on *health*, Dr J. C. Bridge, senior medical inspector, refers to the difficulty in collecting information which would be useful in assessing the effect of varying conditions and occupations on the health of the workers. The physical and psychological effects of long hours, night work, and increased speed of production are subjects on which it has not been possible to obtain enough clinical material to justify dogmatic statements, except in cases where unduly long hours are worked and in processes involving exposure to toxic substances. The conveyor system, largely adopted in the manufacture of motor-cars and wearing apparel, is one which lends itself readily to speeding up. Advocates of particular conveyor systems naturally vie with one another in reducing to minimum the time allowed for each operation, but Dr Bridge draws attention to the existence of well defined physiological limits to the capacity of the body for rapid work. The question whether such systems have any adverse effects on the health of the workers has been referred to the Industrial Health Research Board for further investigation.

The number (163) of cases of *lead poisoning* reported is the lowest on record; moreover their severity continues to diminish. In the tile trade a slight increase of lead poisoning has followed a return to the use of raw lead glazes, but the Department are taking steps to secure strict application of the regulations and the trade itself to experiment with leadless or low solubility glazes. One tile glazer developed lead encephalopathy, a condition now fortunately rare. Poisonings by other metallic substances were few in number. No cases of mercury poisoning and only one case of industrial arsenic poisoning were reported. Attention was directed during the year to the possible effects of contact with the various mercury salts contained in proprietary preparations used for seed dressing. One case of mild mercurialism was seen, and evidence was obtained that the dust from these preparations can cause temporary irritation of the eyes, of the upper respiratory tracts, and of the skin. No case of manganese poisoning appears in the list of the cases notified under Section 73 of the Factory and Workshop Act, 1901, but it is observed that manganese poisoning occurring in a factory or workshop only became notifiable on August 1st, 1936, by an Order made by the Secretary of State. In 1935 four cases of manganese poisoning were found in a factory where manganese ore was being ground. Seven cases of aniline poisoning were reported, and one fatal case of aplastic anæmia occurred from prolonged inhalation of the fumes of benzol used in the manufacture of artificial leather.

Thirty cases of *anthrax* were seen, an increase of ten over the number reported in 1935. One was a fatal case of septicæmic anthrax which occurred in a tannery labourer who had been engaged in unpacking a large consignment of salted calf skins from Lithuania. Post-mortem examination revealed typical anthrax lesions in the right lung and bronchi and gastro-intestinal tract. Anthrax bacilli were found in the spleen, lymph glands, and cerebro-spinal fluid. Another case was of interest in that the primary anthrax lesion on the chin was followed four days later by a second pustule over the right sterno-mastoid region, although treatment by injection of anti-anthrax serum had already begun and resulted finally in the cure of both lesions. Only one case of anthrax occurred in Bradford, which used to be a dangerous centre from this point of view.

Cases of *occupational cancer* occurred in workers exposed to pitch and tar (93), to paraffin (3), and to mineral oil (46). Reference is made to the cases of cancer of the nose and lungs which have appeared in a nickel refining works; the causative agent is still not definitely known. Two fatal cases of cancer of the bladder in chemical workers came to the knowledge of the Department. Both men had been engaged in handling aniline "intermediates" such as benzidine and toluidine. The value of periodical medical examination in workers exposed to pitch and tar is becoming increasingly manifest to employers; it is not stated whether cotton mule spinners also receive periodical medical examination. Since 1928 there has been a noticeable reduction in the number of cases of cutaneous cancer in mule spinners; there is, however, a relative increase of the disease on cutaneous sites other than the scrotum.

A definite increase in the number of cases of *carbon monoxide poisoning* was noted, especially from blast furnace gas. Twelve cases were caused during the use of coke rivet fires in confined spaces on board ship, and four cases occurred through leakage or percolation of carbon monoxide through walls, the source of the fumes being a large vertical refining furnace next door. Other cases of gassing were caused by nitrous fumes, benzol, trichlorethylene, phosgene, and nicotine. Three cases of metal fume fever were seen in men engaged in oxyacetylene cutting of galvanised metal, and one man was gassed by the fumes of a mixture containing ethylene dichloride and lanolin. Five cases of gassing by sulphuretted hydrogen occurred, and Dr Bridge's attention was drawn to a new process in which sulphuretted hydrogen is evolved—namely, the manufacture of foam slag used for building purposes. The inquiry into the effect of the fume from electric arc welding[2] has been continued and extended during the year. In order to elucidate the X ray picture attention has been given to the clinical and radiological effects of the inhalation of certain non-siliceous dusts, especially iron oxide. Evidence is accumulating that the presence of dust in the lungs, with or without a reaction on the lung tissue itself, may be shown in the X ray film and may simulate a pneumoconiosis, although clinically no disabling effects may be found.

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[1] Annual Report of the Chief Inspector of Factories and Workshops 1936. H.M. Stationery Office. Pp 107. 2s.

[2] *Lancet* 1936, i, 71.

Sixty four deaths from *silicosis* and 62 from *silicosis complicated by tuberculosis* came to official notice during the year. In many autopsies on men employed in the silicosis producing trades, including that on a man so employed for 60 years, no traces of the disease were found. It is regretted that sand is being used again instead of the non-siliceous abrasives for sand blasting. Dr Bridge is convinced that only in exceptional circumstances is a siliceous abrasive necessary. The section on industrial dermatitis includes an account of the effect on the skin of chlorinated naphthalene waxes and a short note on the association of multiple warts with the use of bone glue.

AN INTERNATIONAL CONGRESS OF MEDICAL WOMEN

MEDICAL women from 23 countries met in Edinburgh last week for the fourth congress of the Medical Women's International Association, previous congresses had been held in Paris, Vienna, and Stockholm, and an invitation to Budapest has been accepted for the next congress in 1940. The formal inaugural meeting at the McEwan Hall is described by our Scottish correspondent in p. 212.

The subjects discussed at the scientific sessions, which were well attended, were cancer in women and its prevention, maternal mortality, and abortion.

Cancer in Women

Dr Elizabeth Hurdon, director of the Marie Curie Hospital, London, summarised the replies received from workers in eight countries including the United States, Great Britain and some of the Dominions, and the countries of Northern Europe to a questionnaire issued on this subject. Dr Simone Laborde, director of the Service de Curiethérapie de Paris, performed the same service for another group of countries, consisting mostly of the Latin ones. The first question was the relation, if any, between trauma and cervical cancer, though some answers indicated a belief that trauma is an important factor in ætiology there was a conspicuous lack of evidence based on personal experience that cancer of the cervix is ever the result of pessaries contraceptives, or even of the lacerations of childbirth. Dr Catharine Macfarlane (Philadelphia) stated on the basis of an analysis of 3000 hospital patients that cervical cancer occurs six times as often in married parous as in single sterile women, and three times as often in married parous as in married nullipara. Her suggestion that the determination of the incidence of cervical cancer in a series of parous women delivered by Cæsarean section might settle the point was also made by Dr Thurlow Macklin (Canada), who pointed out our ignorance on many relevant questions, for example, we do not know in what proportion of cases cancer follows lacerations or how often cancer develops in a cervix that has never been lacerated, though we do know that this can occur. She also drew attention to the necessity of taking age into account when comparisons are made between parous and non parous women. Madame Bonaretti dal Collo (Milan) reported an investigation of some 1000 cases of uterine cancer which led to the conclusion that lacerations have no direct bearing on malignancy but may predispose to its development by exposure of the mucous membrane to irritation or inflammation. Other clinics in Italy, and some in France, the Argentine, Rumania, and Uruguay who replied to the question attributed little importance to cervical tears in this regard.

The problem of the possible relation between hormonic imbalance and uterine cancer was attacked mainly from the experimental angle. Dr G. M. Bonser (Leeds) called attention to the resemblance between certain polyvalent hydrocarbons now proved to be carcinogenic, and certain hormones, notably œstrone, not only in chemical constitution, but in biological effects. Dr M. D. Gilmour (London) noted that the fact that proliferation produced by œstrone can give rise to malignant growths as well as proliferation produced by carcinogenic hydrocarbons has given a new interest and direction to speculation concerning cancer causation. Dr Bonser spoke also of the growing belief, among those who are driven reluctantly to this conclusion, that heredity plays a part even in cancer produced experimentally, in mice and other animals it is easier to induce malignant change in strains with a hereditary history of susceptibility. This attitude lends additional interest to the communication sent by Dr Maud Slye outlining her theory of cancer inheritance derived from the study of five carefully analysed families of mice. The theory postulates malignancy transmitted as a localised recessive character, each type of malignancy being a unit character capable of suppression by a dominant.

The diversity of opinion among different nations on the value of active propaganda against cancer was well brought out in the discussion, and reflected the temperaments of the peoples concerned. The fact that in many countries there has been an apparent increase rather than a diminution in the mortality from cancer in the recent period during which the education of the public has been pursued with vigour was interpreted in various ways. Prof. Bertha van Hoosen (Loyola, U.S.A.) held that doctors have insufficient faith in their own powers, and therefore fail to encourage patients to seek early treatment. She described a meeting now held annually in her district where the slogan "Cancer can be cured" is reinforced by descriptions of successful cases—5 year cures—by the doctors concerned. French workers appear to agree that extensive hopeful propaganda is highly desirable. British medical women seemed on the whole more doubtful of the extent to which anti-cancer propaganda is likely to be useful at this incomplete stage of our knowledge. Most of them hold that lectures should be given only by doctors and under the general direction of the department of health in any district, special lectures should be incorporated in the training of midwives and nurses, but not of social workers, it is not believed that talks on cancer should be included in the hygiene classes for women and girls, or that regular gynæcological examinations are desirable. To quote from Dr Hurdon's summary "The cost of these would be prohibitive and the results doubtful, while the dangers of encouraging a false sense of security and consequently delay in seeking early advice is obvious."

Among the modern aids to diagnosis described was the radiography of the breast using the soft tissue technique at the Strang Memorial Clinic in

New York This is regarded as a valuable adjunct in the differentiation of benign from malignant tumours Dr I M Scharnagel also gave an account of aspiration biopsy in breast cases as carried out at the same clinic by Dr E S L'Esperance with an 18 gauge needle 64 per cent of cases of breast cancer were said to give a positive diagnosis, and 26 per cent yielded suspicious cells all cases in the series were confirmed by histological section or by the clinical course of the disease

Dr Hurdon and Dr Laborde described the technique of radiotherapy and combined radiotherapy and surgery used in the hospitals under their direction and gave statistics showing how hopeful are the results being obtained Dr Hurdon saw in the increasing use of radium for metrorrhagia an opportunity of discovering early cancer among those presenting themselves for treatment

Maternal Mortality and Abortion

A masterly summary of replies by nearly 50 medical women from 8 countries to a questionnaire on the subject of maternal mortality and abortion was communicated by Prof Bertha van Hoosen The definitions of both terms differed widely in the various countries some of which express the maternal mortality rate as deaths per 1000 live births some as deaths per 1000 live births and stillbirths some—notably New York—as deaths per 10 000 total births (including stillbirths) Other countries including Denmark and Colorado reckon maternal mortality as the relation between deaths due to gravidity or birth to the total number of parturients within the same period Ohio as the death rate of women based upon population of child bearing age while Japan's definition is the proportion of women who die from pregnancies and birth to the total cases of death. There is an even greater variation in defining abortion. The medico legal position presents corresponding anomalies for example notification of pregnancy is compulsory in Virginia alone of all English-speaking countries who sent answers In Norway pregnancy of unmarried women is notifiable and in Denmark therapeutic abortions must be reported to the National Health Service The questions on obstetrical care revealed major differences perhaps the most remarkable is that between the three year resident course of training exacted from the prospective midwife in Holland and the low standards and status of the midwife in the United States where according to Dr van Hoosen, she "is unrecognised and on the whole not worthy of recognition. Prenatal and postnatal care the medico-social position of pregnant women and their education in the contributing countries were reviewed. Of the suggestions made by individuals and countries for improving the maternal mortality rate most concerned the better education of the doctor the midwife and the potential mother Abortion except for medical reasons is considered a crime in nearly all the responding countries, and is punishable by law In Norway almost alone the attitude of the general public apart from religious circles is said to be in favour of the right to interrupt a pregnancy Dr van Hoosen did not state the legal position in that country The number of abortions appears to vary greatly in different lands and the mortality is difficult to assess There is no uniformity among the countries as to methods of combating abortion but several suggest increased facilities for birth control and the enlightenment of the public regarding the dangers of abortion

The report on replies concerning maternal mortality from France Italy Poland Czechoslovakia and Austria was compiled by Dr Pauline Feldmann (Vienna) who was prevented from attending the congress It provided valuable statistics of births and maternal mortality rates in the different countries for different years divided into age groups the deaths being classified into 14 categories of causation

Among those who spoke to their contributions was Dame Janet Campbell, who emphasised the difficulties of comparison due to different methods of compiling statistics and reports Dame Janet said that Great Britain had tackled the problem by enlisting financial aid from the Government for the public health services and the social agencies were helping the education in obstetrics of doctors and midwives was being improved As to abortion it was doubtful whether the apparent increase was a real one It was essential to keep a keen watch for abortionists The departmental committee recently set up had two medical women members the results of its study would be of great interest Dr Charlotte Douglas (Edinburgh) referred to statistical anomalies in classification and Dr Rhoda Adamson to the poor general condition of child bearing women in the neighbourhood of Leeds where she worked She spoke also of the determination of some women to avoid motherhood at any cost of the cunning and skill of abortionists in avoiding detection and of the large incomes made by some of them. Dr R M Wijnberg (Amsterdam) said that illegal abortion flourished there 500 addresses of abortionists were known Better education and efficient means of birth control were the best means to combat the danger Lady Ruth Balfour (Balbirnie) as one of the medical members of the departmental committee on abortion previously mentioned said she was anxious to gain information as to the after effects of abortions conducted with proper therapeutic precautions. It was nominally because of harmful sequelæ that the Russian laws permitting abortion were rescinded in 1936, but there might have been other reasons It was only in a county or State where abortion was not punishable that its effect under favourable conditions could be estimated Dr Sundquist said that in 1930 an official inquiry had revealed 10 000 abortions in a population of 6 million with 80 deaths In Russia the mortality had been estimated variously at 1 in 23 000 and at 1 in 40 000 There seemed to be no evidence of sterility as a sequela. Many other statistics were offered by different speakers and the general opinion favoured education about the dangers of abortion as one of the best means of preventing it, though some contended that many women would be prepared to take any personal risk to avoid giving birth to an unwanted child.

Many speakers joined in the general discussion which aroused so much interest that the decision was reached to allocate some time to this subject at the next congress where the principal subjects to be debated are venereal disease and nutrition

Miss Louisa Martindale M.D (London) was elected president of the association for the next three years

Demonstrations

A number of demonstrations by members of the congress was on view in the Hughes-Bennett Laboratory of the physiology department in the university They included exhibits of experimental and other work on tumours pulmonary disease in children and anæsthetic apparatus A series of sections of whole lungs from cases of pneumonia and tuberculosis in children, shown by Dr Agnes Macgregor (Edinburgh), gave a remarkable illustration of the distribution of these lesions Similar whole organ sections, supplemented by sketches of the operation tissue, formed a mammary tumour demonstration arranged by Dr Edith K Dawson (Edinburgh) These large sections, thin enough to examine at high magnification, are made to enable the pathologist to correlate the gross and microscopic pictures of an extensive diseased area, and incidentally the method is useful in demonstrating the structure of normal tissues An exhibit by Dr Joan Ross (London) of tissues, photomicrographs, and sections illustrated the damaging effect on tissues of the prolonged action of radium in very large dosage Dr Georgina Bonser (Leeds) showed a series of sections of mammary tissue from male and female mice treated with œstrin, to illustrate the proliferative and cancerous changes Another exhibit, by Dr Scharnagel (New York), showed an extensive series of radiograms of various mammary conditions (infection, cysts, tumours, &c), with photographs of aspiration biopsy tissue smears, to demonstrate new methods of differential diagnosis in these lesions This exhibition attracted a constant stream of interested visitors, among whom was Prof James Ewing of New York.

PARLIAMENTARY INTELLIGENCE

GROUNDS FOR DIVORCE AND NULLITY

In the House of Lords on July 15th the Marriage Bill was considered on Report

RECURRENT INSANITY AND DIVORCE

On Clause 2 (grounds of petition of divorce),

Viscount DAWSON OF PENN moved an amendment to add to the subsection relating to incurable insanity the following provision "or whose unsoundness of mind is established to the satisfaction of the court to be of the recurrent type, provided that no petition can be presented until five years have elapsed since the respondent was first declared to be of unsound mind" He moved the amendment because he thought the existing paragraph did not fulfil the purpose which the clause was designed to achieve That purpose was to hold the balance of justice and mercy between the possessor of the insane mind and the other spouse It was for that reason that the five-year period of continuous treatment was instituted. For the majority of cases that would hold good, because at the end of that five years the large majority of insane persons were unlikely to be cured and therefore the considerations of justice and mercy should be transferred from the insane person to the other spouse An important group of what he might call shuttlecock cases, however, were in and out of an asylum all the time, perhaps ten times in twenty years, but not necessarily on any particular occasion for a continuous period of five years These cyclical cases would not come under the paragraph of the clause as it stood at present Such cases were often peculiarly distressing, excitation and exaltation being a prominent feature After a period under care such patients were let out—he did not say improperly—and returned to their homes convalescent, but by no means cured In the early days the healthy spouse was quite willing to put up with that, but after five years when it was clear to the court—which would take medical evidence—that the insanity was of a recurrent type, the petition should be favourably considered As time went on these insanities were liable to be incurable, and the majority after five years showed mental degeneration and often degradation It was therefore cruel after a lapse of a certain number of years to compel the healthy spouse to receive the convalescent patient into perhaps a small house, and to accept sexual advances, the refusal of which might produce a fresh state of insanity The fact that the patients would know that they were liable to be divorced would have no influence at that late stage in these recurrent cases, and even if it did have an influence there was a justice due to the healthy spouse It was true that this cause was not mentioned in the Royal Commission's report, but that Commission sat 25 years ago and knowledge had advanced since that time —Lord ATKIN asked what Lord Dawson meant by 'first declared to be of unsound mind" Viscount DAWSON OF PENN said he meant certification He would rather have it "full certification" Lord GORELL said while he had very great sympathy for the type of case with which this amendment was designed to deal, he hoped their Lordships would not accept the amendment Possibly too much weight might be attached to the findings of the Royal Commission, but at any rate in them they had something which was established after very full enquiry, and if they were to depart from them he thought it should not be in a case of such extreme difficulty Lord Dawson no doubt had in his mind quite clearly what he meant by the recurrent type, but he (Lord Gorell) thought it aroused considerable difficulty of interpretation to anyone who was not a skilled medical man "Recurrent" was a word of general and vague type The word "declared" also introduced great difficulty As he understood it there was no authority to declare anybody of sound mind and on the whole their Lordships would be well advised, having passed insanity under more strict grounds and well defined as a cause for divorce, to rest at that and not at this stage to seek to widen the actual causes of divorce

Viscount DAWSON OF PENN said he would accept an amendment if he might put in the words "full certification"

The Earl of MANSFIELD said he hoped their Lordships would not agree to this amendment It seemed to introduce several new dangers into the Bill, particularly with regard to those unfortunate people who suffered from intermittent insanity, many of whom were at present in various institutions not as certified but as voluntary patients He (Lord Mansfield) was chairman of directors of one of the Royal Asylums of Scotland, and it was their experience that an ever increasing number of their patients were voluntary patients These conditions, it was true, did not as a rule affect the humbler classes, although special provisions were made for certain persons in that category Usually they affected fairly well to-do people, but sometimes also middle class persons of no very great means, and the sane spouse often found it a matter of considerable difficulty to make the payments of a few pounds a week or more to keep the insane spouse within these institutions If this was to be a ground for divorce he was afraid a certain number of unscupulous people would try to get their periodically insane partner certified insane, which probably had not been the case up to now, so as to avoid to a great extent their financial responsibility if and when they were able to get a divorce for this intermittent insanity To go further than the provision now in the Bill would be an unjustifiable loosening of the marriage tie, and a distinct degradation of the words "in sickness and in health."

The Bishop of ST ALBANS asked whether Lord Dawson was quite sure that there would be no further advance in knowledge Lord GAINFORD said he realised from his experience as visitor to mental hospitals what a cruel thing it was for a husband or wife to be chained to an insane spouse The existence of lucid intervals did not seem to him to affect the principle There was surely a very strong case for giving relief under safeguards Lord MAUGHAM said that Lord Dawson's amendment really did not fit in with the Bill as it stood The Bill provided that it was only in exceptional cases where the unfortunate person was incurably of unsound mind that relief was given. It would be very much easier to divorce somebody suffering in the way suggested by Lord Dawson than it would be to divorce a person of incurably unsound mind who had been under restraint for five continuous years He (Lord Maugham) thought that the certificate of a single medical man was a very unsatisfactory way of determining whether a person should be divorced. In certain cases some doctors would certify and others would decline to do so

Viscount DAWSON OF PENN said that if the amendment was open to objection because it did not adequately fit his intention he was quite prepared to withdraw it and bring forward a better wording on the third reading Lord ELTISLEY said the promoters of the Bill would object to the withdrawal of the amendment with a view to dealing with the matter at a later stage The amendment was negatived.

NEW GROUNDS FOR NULLITY

On Clause 7 (new grounds for nullity)

The Marquess of SALISBURY moved an amendment on behalf of Lord CECIL OF CHELWOOD providing that if either party to the marriage should within twelve months after the marriage become manifestly of unsound mind or mentally deficient that fact should be prima faci evidence that such party was of unsound mind or was mentally deficient at the time of the marriage If it was thought that twelve months was too long his noble friend would consent to a shorter period. Under other clauses of the Bill divorce could not happen for five years, and on the assumption that the unfortunate spouse was mad at the time of marriage that was evidently too long Moreover divorce was not quite the resource that everybody would take. He would not press the amendment unless those in charge of the Bill were willing to accept it but he submitted that it was very reasonable

Viscount DAWSON OF PENN was afraid that it would not be possible to carry out this suggestion Some of the most difficult cases of insanity were the insanities of pregnancy and childbirth and the period of twelve months would embrace a large number of cases in that group Many of these insanities were curable being due to temporary causes, and he thought it would inflict an injustice if they passed an amendment of this kind.

Lord GORELL said that the difficulties of accepting the amendment were too great The amendment was withdrawn

Viscount DAWSON OF PENN moved an amendment to provide that the word communicable should be inserted before venereal disease in paragraph (c) of the clause Syphilis was not communicable from the one spouse to the other or only very rarely communicable after the first year from the time of the infection People who had been properly treated were permitted by some authorities to marry one year afterwards and he thought that the very most that other authorities required was two years After that date although syphilis might damage the person originally infected, it would not do damage by communication Then this further difficulty arose that there was a blood test for this disease Suppose that one of the parties to a marriage was infected five years before marriage It was certain that the disease would not be communicable at the time of the marriage though the blood test might remain positive Lord ATKIN asked Lord Dawson how far venereal disease could be inherited Could a man suffer from syphilis in such a way that he might hand it on to his children and yet not communicate it to his wife? That was the point because he (Lord Atkin) thought that the test of voidability ought certainly to apply to a case where a man was suffering from venereal disease which he was capable of handing down to his children. That was a fairly just and proper reason for nullity Viscount DAWSON OF PENN said that if such a charge were going to be made the blood test on the wife would be part of the evidence which would show that the wife was positive The broad answer would be that it would be so rare as not to be worth bringing into the Act that a child should be infected without the mother being infected too certainly as regards the blood test of each. Lord ATKIN said he was quite satisfied with that answer Lord ELTISLEY said that those in charge of the Bill would accept the amendment which was agreed to

On the motion of the Earl of DROGHEDA an amendment was agreed to providing that this Act might be cited as the Matrimonial Causes Act, 1937, and should be construed as one with Part VIII of the principal Act and that this Act and that Part might be cited together as the Matrimonial Causes Acts 1027 and 1937

The Report stage was concluded.

NOTES ON CURRENT TOPICS

The New Veterinary Service

IN the House of Commons on July 12th the Committee stage of the Agriculture Bill was considered.

On Clause 18 (Veterinary Inspectors) Mr GRANT FERRIS moved to substitute the word ' officers for inspector He believed that the farmer would object very strongly to being inspected though he might like to see the veterinary surgeon on his premises.—Mr RAMSBOTHAM for the Government said that in view of the difficulties involved in making the change and the very little advantage that the veterinary profession would gain he opposed the amendment, and it was withdrawn.

Mr MACLAREN moved an amendment providing that the Minister should appoint a chief veterinary officer who should be responsible directly to him for the organisation of the centralised veterinary service and for supervising the duties to be discharged by the veterinary officers to be appointed He said that when they considered the work done by the Ministry of Health in preserving as far as possible good health conditions and the enormous expense of maintaining a medical service it seemed nothing short of common sense that the same regard should be had to the food that the public consumed and a similar arrangement was desirable —Mr RAMSBOTHAM said that it would be a new and dangerous principle to instruct a Ministry how to carry on its work. The amendment was quite unnecessary since there was and had been for years, a chief veterinary officer on the staff of the Ministry, and there was no intention of abolishing that post.—Mr W S MORRISON Minister of Agriculture said it was intended that the chief veterinary officer in charge would be the person who could advise him about matters that brought in the professional status of his officers and he could deal with them as a distinguished member of the same profession as his officers He had no hesitation in giving the assurance that for all veterinary duties only properly qualified men would be appointed

The amendment was withdrawn.

On the motion that Clause 22 (eradication areas and attested areas) stand part of the Bill Mr MORRISON stated that the idea was that they should start with a limited eradication area in which there was a low incidence of disease gradually reduce the disease and then expand the area to the limit of practical possibility He agreed that there would be less confusion in controlling the movement of animals when dealing with one local authority instead of many but the main criterion would be the presence or absence of disease. They would find by their survey where the clean cattle were before they could delimit the size of the area All cattle brought into an attested area would have to be clean They were trying to approach the question of tuberculosis in quite a new way It had been considered as a milk disease alone and one which affected only the female of the bovine species. He was confident that it affected both sexes, and they would make what orders were necessary to prevent the reinfection of an area by beef cattle coming in He hoped that one result of the scheme would be that there would be enough areas ultimately for them to supply themselves to a great extent with the stores they required The clause was agreed to

The Factories Bill

On July 12th the House of Lords went into Committee on the Factories Bill

Earl **De La Warr** moved the omission of Clause 42, which deals with the provision of washing facilities *in factories*, and this was agreed to The Earl of **Munster** moved to insert a new clause providing for the maintenance of suitable and accessible facilities for washing for employed persons, the Secretary of State having power to authorise exemptions where compliance with the requirements would be unreasonable This section of the Act would come into operation on July 1st, 1939, "provided that, as respects persons employed in any process in which lead, arsenic, or any other poisonous substance is used, or any process prescribed by the Secretary of State being a process liable to cause dermatitis or any other infection of the skin, this section shall come into operation at the commencement of this Act" Lord **Addison** moved an amendment to leave out the words "of the skin" at the end of the proviso to the clause He said that during the war a very large number of people were infected in the factories with T N T poisoning At first the infection was thought to proceed through the skin, but subsequent research showed that a considerable percentage of the infection was clearly traceable to the fact that the people put their stained hands to their mouths, and the infection was in fact through the mouth There was no point in retaining the words "of the skin" The Earl of **Munster** said the Government would look into the wording of this new clause before the Report stage to see if they could meet one or two points, including that raised by Lord Addison The amendment was withdrawn and the new clause was agreed to

On Clause 49 (protection of eyes in certain processes),

The Earl of **Munster** moved an amendment, which was agreed to, empowering the Secretary of State to give direction on the use of screens where this was found desirable

On Clause 53 (underground rooms), an amendment by Lord **Faringdon** was withdrawn on a promise by Earl **De La Warr** that the Government would look into the matter

An amendment also by Lord **Faringdon** providing that basement bakehouses should not be used after the expiration of five years from the passing of this Act was negatived, and also a new clause prohibiting night work in bakehouses

Amendments providing that it should be unlawful for a young person under the age of 15 years to be employed in a factory (the Earl of **Listowel**), for a 40-hour week instead of 48 hours for women and young persons, and for the reduction of the weekly hours of work of young persons under 16 from 44 to 40 were negatived.

In the House of Lords on July 19th the Matrimonial Causes Bill (formerly called the Marriage Bill) was read the third time by 79 votes to 28, and passed, and on July 20th the Royal Samaritan Hospital for Women, Glasgow, Order Confirmation Bill was read the third time, and passed

QUESTION TIME

WEDNESDAY, JULY 14TH

Hours of Work of Hospital Nurses

Mr **Kirby** asked the Prime Minister whether he was aware that some hospitals and institutions had difficulty in recruiting nursing staffs and that some of the difficulty is due to the working of long hours, and whether in order to meet this difficulty facing local authorities, he would consider giving early facilities for the further stages of the Local Authorities (Hours of Employment in connexion with Hospitals and Institutions) Bill —Mr **Chamberlain** replied I fear I can hold out no hope of special facilities being given for the passage of this Bill

Conditions of Nurses in Army Hospitals

Mr **Kirby** asked the Secretary of State for War the number of hours per week normally worked by the nursing staffs employed in Army hospitals showing separately, the hours of serving-soldier male nurses and female nurses, respectively —Mr **Hore Belisha** replied The number of hours normally worked by the nursing staffs employed in Army hospitals is as follows Female nurses—i e members of Queen Alexandra's Imperial Military Nursing Service—on day duty, an average of 47 hours a week on night duty, an average of 71 hours a week Serving soldier male nurses—i e personnel of the Royal Army Medical Corps—on day duty, an average of 56 hours a week, on night duty, an average of 65 hours a week Night duty is not performed by nurses, male or female, for more than two months consecutively The total period spent on night duty varies with the size of the staff but averages two months a year The hours stated are actual hours spent on duty after deduction of time allowed for meals, recreation, &c

THURSDAY, JULY 15TH

Coal-miners and Silicosis

Mr **James Griffiths** asked the Home Secretary the number of applications received by the Silicosis Medical Board for coal miners for certificates of disablement under the various Industries (Silicosis) Schemes, 1928–34, in the six months ended June 30th, 1937, the number of applications received in the same period for certificates that death was caused by silicosis, how many of the applications were granted and how many refused, and separate particulars for the anthracite coalfield of South Wales —Sir **Samuel Hoare** replied Applications to the Silicosis Medical Board in the six months ended June 30th, 1937, for certificates under the Various Industries (Silicosis) Schemes are as follow —

—	No of applications received	No granted	No refused or negative	No awaiting decision
Death	48	32	14	2
Disablement or suspension	327	130	162	35
Separate particulars for anthracite miners for same period				
Death	23	14	7	2
Disablement	114	56	45	13

Drunkenness Charges and Medical Examinations

Sir **John Mellor** asked the Home Secretary whether all police forces had instructions that any prisoner in custody on a charge involving drunkenness was to be informed of his right to examination by a doctor selected by himself, and whether they were further instructed as to the time at which such information should be given.—Sir **Samuel Hoare** replied As my hon friend will appreciate, cases not infrequently occur in which a prisoner in custody on a charge involving drunkenness is incapable of expressing any wishes in the matter, and some such prisoners are obviously not in a position to pay a doctor's fee In such cases it would clearly be superfluous to offer to call a doctor of the prisoner's choice, but as I have already stated any prisoner who expressed a wish to call in a doctor would be given all facilities to do so

Sir J **Mellor** Will my right hon friend give instructions that any prisoners who are capable of taking advantage of it should be informed of their right to call an independent doctor and that that information should be given to them at the earliest possible moment ?

Viscountess **Astor** Is not that rather a dangerous precedent, and does not the Minister think that some persons have pet doctors and that pet doctors are apt to say what their patients want them to say ?

No further answer was given.

Milk for School children

Mr GORDON MACDONALD asked the Parliamentary Secretary to the Board of Education the total number of local education authorities that had decided to grant free milk to elementary school-children during the holidays, giving separate figures for Lancashire and if he would take all the steps in the power of his department to get this done in all cases —Mr KENNETH LINDSAY replied In the year which ended on March 31st 1937 fifty local education authorities including seven authorities in Lancashire provided free milk for selected necessitous children attending public elementary schools during all or some of the school holidays I am unable to say how many other authorities have decided to introduce such arrangements but the London County Council have recently prepared a scheme which has been approved by the Board of Education, under which milk will be provided during the coming summer holidays in five parks and recreation grounds My right hon. friend would welcome the extension of such arrangements but it is not always easy to secure the attendance of children during the holidays, even when the milk is given free

Sir THOMAS MOORE asked the Parliamentary Secretary to the Board of Education whether his attention had been called to the difficulties in various parts of the country in obtaining supplies of milk for school-children at small schools and whether in view of the fact that in such cases the difficulties of supply left no profit to the suppliers he would consider whether some amendment of the scheme could be made so as to ensure that the children at these schools got adequate supplies of milk —Mr KENNETH LINDSAY replied Yes Sir As I said in the answer which I gave on June 28th, difficulty is being experienced in obtaining supplies of milk in certain rural areas because the suppliers claim that the distribution allowance under the milk in schools scheme is insufficient The future of this scheme is one of the questions which falls for consideration in connexion with long term milk policy a matter to which the Government are giving close attention and in this connexion the difficulty to which my hon friend refers will not be overlooked

Bathing Places Pollution at Eton and Windsor

Lieut Commander FLETCHER asked the Minister of Health if he had been informed that Eton College bathing places had been closed on account of pollution of the Thames that Windsor swimming baths had been closed for the same reason and that the Eton Urban Council had erected notices warning bathers of the danger of bathing in the Thames on account of pollution ; and if he had any statement to make —Sir KINGSLEY WOOD replied Yes Sir I understand that when the Slough Urban District Council have completed their improvements to their sewage disposal works at Dorney and Cippenham the trouble will be remedied In the meantime the council are taking temporary measures to reduce the pollution as far as possible I am watching the situation carefully as is the Thames Conservancy

Sir R MELLER Can the Minister give an assurance that there is no danger involved to the water-supply of London ?

Sir KINGSLEY WOOD I can say that the Thames water is fully treated and as supplied to consumers is of first class quality both chemically and bacteriologically

Mr A SOMERVILLE Is the right hon. gentleman aware that the Thames Conservancy Board has just received a report from their official analyst and that the report is eminently satisfactory ? Is he further aware that the Metropolitan Water Board which is responsible for the water supply of London is quite satisfied with the condition of Thames water ?

Sir KINGSLEY WOOD : I am much obliged to the hon Member for the information.

Noises Made by Motorists at Night

Mr MANDER asked the Minister of Transport if he was aware of the increase in unnecessary noises made at night by motorists starting up and racing their engines and moving off in low gear and the great inconvenience caused to invalids and others in the early hours of the morning through these noises and what steps he had taken to cause a cessation of these practices —Mr BURGIN replied It is an offence to use a motor vehicle on a road in such manner as to cause any excessive noise which could have been avoided by the exercise of reasonable care on the part of the driver I hope the hon Member s question will serve to draw the attention of motorists to this important provision of the law

Government Offices and Public Health Act

Sir NICHOLAS GRATTAN DOYLE asked the First Commissioner of Works whether he would concede to authorised officers of a local authority the right under Section 287 of the Public Health Act 1936 to enter any offices under his control for the purpose of ascertaining the conditions therein —Sir P SASSOON replied : The Act provides that any local authority to which the Act applies may agree with the appropriate Government Department that any of the provisions of the Act shall apply to a Government property My right hon friend will be prepared to consider any representations which may be made by a local authority regarding the application of Section 287 to offices under his control

Workers Contributions to Hospitals

Mr ROBERT GIBSON asked the First Lord of the Admiralty what were the average numbers of established and unestablished workers, respectively engaged at the Royal Naval Torpedo Factory Greenock, during the year ended Dec 31st 1936 or other suitable date and what was the total sum collected for hospital purposes from the established workers during that period —Colonel LLEWELLIN replied : The average numbers of established and unestablished workers engaged at the Royal Naval Torpedo Factory Greenock, during the year ended Dec. 31st 1936, were 277 and 2538 respectively and the total sum collected for hospital purposes by deduction from the wages of established workers during that period was £150

Nurses Hours in Naval Hospitals

Mr KIRBY asked the First Lord of the Admiralty the number of hours per week normally worked by the nursing staffs male and female in naval hospitals ashore —Mr DUFF COOPER replied : The hours worked by nursing staffs in naval hospitals vary with the work to be done The normal hours of nursing sisters may however be taken as 51 per week for day duty and 64 for night duty and of sick berth staff 54 a week for day duty and 73½ for night duty These figures have been arrived at after deducting time allowed for meals and recreation. Nursing sisters are placed on night duty one month in every six and sick berth ratings one month in every three The normal duration of night duty is one month

TUESDAY JULY 20TH

Tuberculosis in the Army

Mr DAY asked the Secretary of State for War the number of persons who had been granted pensions during the previous three years on account of tuberculosis attributable to the conditions of service and how these figures compared with those for the corresponding 12 months.—Mr HORE BELISHA replied : Of the soldiers invalided from the Army for tuberculosis during the last three years the following numbers were awarded attributable disability pensions 1934 58 ; 1935 58 and 1936 83

Insanity in Scotland

Mr ROBERT GIBSON asked the Secretary of State for Scotland how many male and female persons respectively were received into mental institutions during each of the years 1930 to 1936 inclusive ; how many of these persons so admitted were under 50 years of age 50 and under 60 60 and under 70 and over 70 years of age respectively and how many in each class were in receipt of widows pensions and old-age pensions respectively at the time of admission —Mr ELLIOT replied The informa by beef cattle coming in He hoped that one result of the scheme would be that there would be enough areas ultimately for them to supply themselves to a great extent with the stores they required The clause was agreed to

The Factories Bill

On July 12th the House of Lords went into Committee on the Factories Bill

Earl De La Warr moved the omission of Clause 42, which deals with the provision of washing facilities in factories, and this was agreed to The Earl of Munster moved to insert a new clause providing for the maintenance of suitable and accessible facilities for washing for employed persons, the Secretary of State having power to authorise exemptions where compliance with the requirements would be unreasonable This section of the Act would come into operation on July 1st, 1939, "provided that, as respects persons employed in any process in which lead, arsenic, or any other poisonous substance is used, or any process prescribed by the Secretary of State being a process liable to cause dermatitis or any other infection of the skin, this section shall come into operation at the commencement of this Act" Lord Addison moved an amendment to leave out the words "of the skin" at the end of the proviso to [illegible]he clause He said that during the war a very large [illegible]mber of people were infected in the factories with [illegible] N T poisoning At first the infection was thought to proceed through the skin, but subsequent research showed that a considerable percentage of the infection was clearly traceable to the fact that the people put their stained hands to their mouths, and the infection was in fact through the mouth There was no point in retaining the words "of the skin" The Earl of Munster said the Government would look into the wording of this new *clause before the Report stage to* see if they could meet one or two points, including that raised by Lord Addison The amendment was withdrawn and the new clause was agreed to

On Clause 49 (protection of eyes in certain processes),

The Earl of Munster moved an amendment, which was agreed to, empowering the Secretary of State to give direction on the use of screens where this was found desirable

On Clause 53 (underground rooms), an amendment by Lord Faringdon was withdrawn on a promise by Earl De La Warr that the Government would look into the matter

An amendment also by Lord Faringdon providing that basement bakehouses should not be used after the expiration of five years from the passing of this Act was negatived, and also a new clause prohibiting night work in bakehouses

Amendments providing that it should be unlawful *for a young person* under the age of 15 years to be employed in a factory (the Earl of Listowel), for a 40 hour week instead of 48 hours for women and young persons, and for the reduction of the weekly hours of work of young persons under 16 from 44 to 40 were negatived

In the House of Lords on July 19th the Matrimonial Causes Bill (formerly called the Marriage Bill) was *read the third time by 79 votes to* 28, and passed, and on July 20th the Royal Samaritan Hospital for Women, Glasgow, Order Confirmation Bill was read the third time, and passed

QUESTION TIME

WEDNESDAY, JULY 14TH

Hours of Work of Hospital Nurses

Mr Kirby asked the Prime Minister whether he was aware that some hospitals and institutions had difficulty in recruiting nursing staffs and *that some of the difficulty* is due to the working of long hours, and whether, in order to meet this difficulty facing local authorities, he would consider giving early facilities for the further stages of the Local Authorities (Hours of Employment in connexion with Hospitals and Institutions) Bill —Mr Chamberlain replied I fear I can hold out no hope of special facilities being given for the passage of this Bill

Conditions of Nurses in Army Hospitals

Mr Kirby asked the Secretary of State for War the number of hours per week normally worked by the nursing staffs employed in Army hospitals showing separately, the hours of serving-soldier male nurses and female nurses, respectively —Mr Hore Belisha replied The number of hours normally worked by the nursing staffs employed in Army hospitals is as follows Female nurses—i e, members of Queen Alexandra's Imperial Military Nursing Service—on day duty, an average of 47 hours a week on night duty, an average of 71 hours a week Serving soldier male nurses—i e, personnel of the Royal Army Medical Corps—on day duty, an average of 56 hours a week, on night duty, an average of 65 hours a week Night duty is not performed by nurses, male or female, for more than two months consecutively The total period spent on night duty varies with the size of the staff but averages two months a year The hours stated are actual hours spent on duty after deduction of time allowed for meals, recreation, &c

THURSDAY, JULY 15TH

Coal-miners and Silicosis

Mr James Griffiths asked the Home Secretary the number of applications received by the Silicosis Medical Board for coal miners for certificates of disablement under the various Industries (Silicosis) Schemes, 1928–34, in the six months ended June 30th, 1937, the number of applications received in the same period for certificates that death was caused by silicosis how many of the applications were granted and how many refused, and separate particulars for the anthracite coalfield of South Wales —Sir Samuel Hoare replied Applications to the Silicosis Medical Board in the six months ended June 30th, 1937, for certificates under the Various Industries (Silicosis) Schemes are as follow —

—	No of applications received	No granted	No refused or negative	No awaiting decision
Death	48	32	14	2
Disablement or suspension	327	130	162	35

Separate particulars for anthracite miners for same period

Death	23	14	7	2
Disablement	114	56	45	13

Drunkenness Charges and Medical Examinations

Sir John Mellor asked the Home Secretary whether all police forces had instructions that any prisoner in custody on a charge involving drunkenness was to be informed of his right to examination by a doctor selected by himself, and whether they were further instructed as to the time at which such information should be given.—Sir Samuel Hoare replied As my hon friend will appreciate, cases not infrequently occur in which a prisoner in custody on a charge involving drunkenness is incapable of expressing any wishes in the matter, and some such prisoners are obviously not in a position to pay a doctor's fee In such cases it would clearly be superfluous to offer to call a doctor of the prisoner's choice, but as I have already stated any prisoner who expressed a wish to call in a doctor would be given all facilities to do so

Sir J Mellor Will my right hon friend give instructions that any prisoners who are capable of taking advantage of it should be informed of their right to call an independent doctor, and that that information should be given to them at the earliest possible moment?

Viscountess Astor Is not that rather a dangerous precedent, and does not the Minister think that some persons have pet doctors and that pet doctors are apt to say what their patients want them to say ?

No further answer was given

Milk for School children

Mr **Gordon Macdonald** asked the Parliamentary Secretary to the Board of Education the total number of local education authorities that had decided to grant free milk to elementary school-children during the holidays giving separate figures for Lancashire and if he would take all the steps in the power of his department to get this done in all cases —Mr **Kenneth Lindsay** replied In the year which *ended on March 31st 1937 fifty local* education authorities including seven authorities in Lancashire provided free milk for selected necessitous children attending public elementary schools during all or some of the school holidays I am unable to say how many other authorities have decided to introduce such arrangements, but the London County Council have recently prepared a scheme which has been approved by the Board of Education, under which milk will be provided during the coming summer holidays in five parks and recreation grounds My right hon friend would welcome the extension of such arrangements but it is not always easy to secure the attendance of children during the holidays, even when the milk is given free

Sir **Thomas Moore** asked the Parliamentary Secretary to the Board of Education whether his attention had been called to the difficulties in various parts of the country in obtaining supplies of milk for school-children at small schools and whether in view of the fact that in such cases the difficulties of supply left no profit to the suppliers he would consider whether some amendment of the scheme could be made so as to ensure that the children at these schools got adequate supplies of milk.—Mr **Kenneth Lindsay** replied Yes Sir As I said in the answer which I gave on June 28th difficulty is being experienced in obtaining supplies of milk in certain rural areas because the suppliers claim that the distribution allowance under the milk-in-schools scheme is insufficient The future of this scheme is one of the questions which falls for consideration in connexion with long term milk policy a matter to which the Government are giving close attention and in this connexion the difficulty to which my hon friend refers will not be overlooked

Bathing Places Pollution at Eton and Windsor

Lieut Commander **Fletcher** asked the Minister of Health if he had been informed that Eton College bathing places had been closed on account of pollution of the Thames; that Windsor swimming baths had been closed for the same reason and that the Eton Urban Council had erected notices warning bathers of the danger of bathing in the Thames on account of pollution and if he had any statement to make —Sir **Kingsley Wood** replied Yes Sir I understand that when the Slough Urban District Council have completed their improvements to their sewage disposal works at Dorney and Cippenham the trouble will be remedied In the meantime the council are taking temporary measures to reduce the pollution as far as possible I am watching the situation carefully as is the Thames Conservancy

Sir **R Meller**: Can the Minister give an assurance that there is no danger involved to the water-supply of London ?

Sir **Kingsley Wood** I can say that the Thames water is fully treated and as supplied to consumers is of first-class quality both chemically and bacteriologically

Mr **A Somerville** Is the right hon. gentleman aware that the Thames Conservancy Board has just received a report from their official analyst and that the report is eminently satisfactory ? Is he further aware that the Metropolitan Water Board which is responsible for the water-supply of London is quite satisfied with the condition of Thames water ?

Sir **Kingsley Wood** I am much obliged to the hon Member for the information.

Noises Made by Motorists at Night

Mr **Mander** asked the Minister of Transport if he was aware of the increase in unnecessary noises made at night by motorists starting up and racing their engines and moving off in low gear and the great inconvenience caused to invalids and others in the early hours of the morning through these noises and what steps he had taken to cause a cessation of these practices —Mr **Burgin** replied: It is an offence to use a motor vehicle on a road in such manner as to cause any excessive noise which could have been avoided by the exercise of reasonable care on the part of the driver I hope the hon Member's question will serve to draw the attention of motorists to this important provision of the law

Government Offices and Public Health Act

Sir **Nicholas Grattan Doyle** asked the First Commissioner of Works whether he would concede to authorised officers of a local authority the right under Section 287 of the Public Health Act 1936 to enter any offices under his control for the purpose of ascertaining the conditions therein —Sir **P Sassoon** replied The Act provides that any local authority to which the Act applies may agree with the appropriate Government Department that any of the provisions of the Act shall apply to a Government property My right hon friend will be prepared to consider any representations which may be made by a local authority regarding the application of Section 287 to offices under his control

Workers Contributions to Hospitals

Mr **Robert Gibson** asked the First Lord of the Admiralty what were the average numbers of established and unestablished workers respectively engaged at the Royal Naval Torpedo Factory Greenock during the year ended Dec. 31st 1936 or other suitable date and what was the total sum collected for hospital purposes from the established workers during that period —Colonel **Llewellin** replied The average numbers of established and unestablished workers engaged at the Royal Naval Torpedo Factory Greenock, during the year ended Dec 31st 1936 were 277 and 2538 respectively and the total sum collected for hospital purposes by deduction from the wages of established workers during that period was £150

Nurses Hours in Naval Hospitals

Mr **Kirby** asked the First Lord of the Admiralty the number of hours per week normally worked by the nursing staffs male and female in naval hospitals ashore —Mr **Duff Cooper** replied The hours worked by nursing staffs in naval hospitals vary with the work to be done The normal hours of nursing sisters may however be taken as 51 per week for day duty and 64 for night duty and of sick berth staff 54 a week for day duty and 73½ for night duty These figures have been arrived at after deducting time allowed for meals and recreation Nursing sisters are placed on night duty one month in every six and sick berth ratings one month in every three The normal duration of night duty is one month

TUESDAY JULY 20TH

Tuberculosis in the Army

Mr **Day** asked the Secretary of State for War the number of persons who had been granted pensions during the previous three years on account of tuberculosis attributable to the conditions of service and how these figures compared with those for the corresponding 12 months —Mr **Hore Belisha** replied Of the soldiers invalided from the Army for tuberculosis during the last three years *the following numbers were awarded* attributable disability pensions 1934 58 1935 58 and 1936 83

Insanity in Scotland

Mr **Robert Gibson** asked the Secretary of State for Scotland how many male and female persons respectively were received into mental institutions during each of the years 1930 to 1936 inclusive; how many of these persons so admitted were under 50 years of age 50 and under 60 60 and under 70 and over 70 years of age respectively and how many in each class were in receipt of widows pensions and old-age pensions respectively at the time of admission —Mr **Elliot** replied The informa tion desired in the first and second parts of the question will be communicated to the hon Member as soon as returns have been received from all the mental institutions regarding the age groups of persons admitted The information desired in the last part of the question could only be obtained by examination of the records of the Department of Health, and this would involve an expenditure of time and trouble which does not seem justifiable

Schools on the Black List

Viscountess ASTOR asked the Parliamentary Secretary to the Board of Education how many schools in England and Wales remained on the black list, and what progress was being made in the reduction of the number —Mr K. LINDSAY replied There are still 900 schools on the Board's list of schools with defective premises Plans for the reconstruction, improvement, or replacement of 120 of these have been approved by the Board I have no doubt that as reorganisation proceeds and definite conclusions are reached as to the future of the remaining schools, further progress will be accelerated

Silicosis

Mr GRENFELL asked the Secretary for Mines whether he would authorise the collection of the fullest possible information at mines where more than three cases of silicosis had been certified, showing the names and addresses of men who, in the last 20 years, had been engaged in boring with the use of machines either in hard headings or in ripping, with the type of machines used and the yardage of hard headings driven, and whether he would extend an invitation to the workmen's representatives at these mines to collaborate in supplying further information regarding the effect of such employment upon the persons so employed in order that a complete record of the extent of disability ensuing upon this class of work should be ascertained —Captain CROOKSHANK replied I am in full sympathy with the general object in view, but I do not think an investigation on the lines proposed could prove sufficient or satisfactory There are, for example, a good many cases of silicosis among coal miners who have never used machine drills and, moreover, the nature and extent of disability in a particular case could not be reliably determined without medical examination

Mr KIRBY asked the Home Secretary if he could give particulars of the prevalence of silicosis in Lancashire, in what trades and callings it was particularly prevalent, and what steps, if any, were being taken on preventive and remedial lines to combat the same —Mr GEOFFREY LLOYD, Under Secretary, Home Office, replied I regret that separate information as to the incidence of silicosis in Lancashire is not available The industries and processes in which this disease occurs are indicated in a Home Office memorandum Preventive measures vary according to the nature of the industry, but the most important are mentioned in the memorandum In addition to the general requirements of the Factory Acts for the protection of health, regulations specially directed against risks from silica and other dusts have been made for certain industries Precautionary measures in mines and quarries are a matter for the Mines Department

Infant Mortality in Barbados

Mr DAVID ADAMS asked the Secretary of State for the Colonies whether he could give any figures showing how far the mortality among infants and children in Barbados had improved since the West Indian Sugar Commission of 1930 reported on the starvation of infants prevailing in that colony —Mr ORMSBY GORE replied I regret that the infant mortality rate in Barbados, which was 251 per 1000 in 1930, showed only a slight improvement in 1935 when it was 220 per 1000

MEDICAL NEWS

University of London

At recent examinations the following candidates were successful

D.M.R.E

Eleanor K Abbott I A Abou Sinna, Pranatharthihara Arunachalam C S Chatterjea Phyllis M Fraser M I Ghattas, H H Navid D W Smithers and R C W Staley

University of Manchester

Dr John Yule has been appointed clinical lecturer in infectious diseases Dr E L Patterson, assistant lecturer in anatomy, and Dr Margaret I Williams, assistant lecturer in applied physiology The following demonstrators in anatomy have also been appointed Dr D D Cranna, Dr D A Richmond, and Dr F W Smith

Mr Edgar Houghton has been appointed senior clinical lecturer in dental surgery, and Mr Harold Bennison, Mr Ralph Cocker, Mr P R Lewis, and Mr F H Parsonage, clinical lecturers in dental surgery Mr J K. Holt has been appointed lecturer in operative technique, but will not take up his duties until September, 1938 During the session 1937–38, Mr J W Smith will take his place The following have been appointed honorary dental surgeons to the Dental Hospital Mr H R P Collett, Mr J W Gibbons, Dr James Kershaw Mr Felix Rawsthorne, Dr Harold Simms, and Mr C H Travis

Dr J C Bramwell, Mr E E Hughes and Dr Stanley Hodgson have been elected members of the boards of faculties for medicine

Joint Tuberculosis Council

Post-graduate courses in artificial pneumothorax work at the Brompton Hospital have been arranged by this council Each course will consist of fourteen sessions extending over a fortnight, and will be limited to four members Further information may be had from Dr William Brand, hon secretary for post-graduate courses for the council, 8 Christ Church place, Epsom, Surrey

British Empire Cancer Campaign

A studentship is offered by this body to a young graduate in medicine or science who wants experience in the experimental study of malignant growths from the biological and particularly from the virus aspect, with a view to undertaking independent work later in this field Further information will be found in our advertisement columns

London Hospital

A post-graduate course for former students of this hospital will be held from Oct 20th to 23rd The annual dinner will take place at the Trocadero Restaurant, Shaftesbury avenue, W, on Oct 21st, at 7 30 P M, and the hon secretaries are Mr G E Neligan and Dr A G Maitland Jones, who may be addressed at the hospital

International Anthropological Congress

The second Congrès International des Sciences Anthropologiques et Ethnologiques will be held at Copenhagen from August 1st to 6th, 1938 The secretary is Dr Kaj Birket-Smith, Nationalmuseet, 10, Ny Vestergade, Copenhagen K

Archiv für Kreislaufforschung

Under this title a new journal is appearing as a supplement to the *Zeitschrift fur Kreislaufforschung* which is intended to provide a suitable place for comprehensive monographs on experimental, clinical, or statistical work done on diseases of the circulation There will also be critical reviews It is hoped that this will allow the parent journal to find more space for shorter articles and for epitomes of current literature The editors of the new journal are Prof Eb Koch (Bad Nauheim) and Prof Ed Stadler (Plauen i V)

Hinckley Hospital

Lady Edge recently opened the new women's ward veranda at this hospital This is the first part of an extension scheme which will cost £20,000

North Western Tuberculosis Society

Dr George Jessel has been elected president of this society and Dr Alec Fleming (11 Woodvale road Knutsford Cheshire) has been appointed to succeed Dr Jessel as hon. secretary

Post graduate Course in Neurology

Courses of lectures and demonstrations on neurology will be given at the National Hospital Queen-square London W C from Oct 11th to Dec. 10th and again from Jan 31st to April 1st Further information may be had from the secretary of the hospital

Registrar General for Scotland

Mr James Gray Kyd has been appointed registrar general for Scotland in succession to Mr A. Froude, who has retired Mr Kyd is a principal actuary in the Government's Actuary's Department Since 1932 he has also acted as secretary to the department

Papworth Village Settlement

At the annual meeting of the settlement it was announced that more than 400 beds are available for patients and more than a thousand people are benefiting from the scheme The necessary £75,000 was collected by Papworth in order to claim Lord Nuffield's gift of £25 000 and this £100 000 has been spent on new cottages workshop sanatorium accommodation a village store and machinery The home for tuberculous nurses to which Mr E Meyerstein has contributed £20 000 is nearly finished Of the ex patients working at Papworth 65 have been working there continuously for ten years.

Medical Congresses in Budapest

The Central Committee for Post-graduate Work at Budapest will hold a post-graduate course in balneology and rheumatism under the auspices of the central committee of the Budapest Thermal Baths and Health Resorts from Oct 9th to 12th The lecturers will include: I Lépine (Lyons) F Besançon (Paris) W Copeman (London) I Gunzburg (Brussels) G Kahlmeter (Stockholm) F Klinge (Münster) H A. Salvesen (Oslo) Cesare Frugoni (Rome) and Louis Pap de Bilko (Hungary) A balneological congress will also be held in Budapest from Oct 7th to 14th from Oct 6th to 8th the Budapest Royal Society of Medicine will celebrate its centenary The office of the post graduate committee is Üllöi ut 26 Budapest VIII.

London County Council

At a meeting of the Council held on July 20th a scheme for the provision of a new ward block for maternity cases at St Pancras Hospital was submitted by the hospitals and medical services committee The scheme will increase the fixed bed accommodation at St Pancras Hospital by 94 beds and the maternity unit of New End Hospital Hampstead where the committee considers the accommodation is inadequate will be transferred there The new block will cost over £70 000

The housing and public health committee submitted schemes for the erection of over 400 flats providing accommodation for more than 2000 people in various parts of south and east London which will cost over a quarter million pounds and of three blocks of flats in Islington accommodating 870 people at a cost of £100 000 An estimate for £71 000 was also submitted for the development of a housing area in Stepney The parks committee recommended the Council to contribute £81 700 towards the cost of acquiring Enfield Chase under the Green Belt scheme This is an area of over 2000 acres on the north side of Trent Park which is about 12 miles from Charing Cross

The total expenditure of the supplies department of the Council during last year was nearly £4 400 000 and a hospital population of over 113,000 and a school population of over 800 000 was served. The cost of food was nearly £1 430 000 which included over 1 400 000 lb of butter 9 [illegible]00 000 eggs 1½ million lb of bacon 4 400 000 lb of sugar and 20½ million pints of milk and cream The purchase of bulk quantities of fittings for new houses has also proved economical The specifications and designs of medical and surgical equipment have been reviewed and various new types adopted Ten new ambulances of improved type were supplied during the year

International Congress on Hepatic Insufficiency

The closing date for applications for membership of the International Congress on Hepatic Insufficiency is August 1st *The congress is being held at Vichy from Sept* 16th to 18th The secretariat of the congress should be addressed at 24 Boulevard des Capucines Paris

Refresher Courses for Health Visitors

The Department of Health for Scotland announces that refresher courses for health visitors are again to be held each autumn in one of the principal Scottish cities The first for 40 visitors will take place in Glasgow from Oct 4th to 9th and applications should be sent to the medical officer of health before August 31st

Nurses Home at Keighley Hospital

Sir Donald Horsfall has opened the new nurses home at this hospital which has been built at a cost of some £20 000

New Albert Dock Hospital

On July 13th Lord Ritchie of Dundee laid the foundation-stone of this hospital which is to be erected on a raft of concrete built upon piles Owing to increased building costs if the hospital is to be opened free of debt a further £20 000 additional to the original appeal for £75 000 will be needed

New Dental Hospital for Sheffield

It is stated that tenders will soon be issued for the construction of a new dental hospital in Sheffield. At present the dental mechanics laboratory is at Sheffield University and dental surgery is taught at the Royal Hospital but it is proposed to transfer the whole to the new dental institution.

Royal National Hospital for Consumption, Ventnor

This hospital reports a large increase in surgical treatment One hundred operations were performed there last year as compared with eleven in 1931 The number of patients is increasing

Princess Elizabeth of York Hospital for Children Shadwell

The Lord Mayor presided at a Mansion House dinner on July 15th in aid of this hospital when the Archbishop of Canterbury appealed for £130 000 which is still needed to complete the new buildings at Banstead Wood. About £70 000 is in hand and donations at the dinner amounted to £5701

Hospital Service in Slough

The committee appointed to inquire into the need of a hospital service at Slough has issued a report in which they advise against the creation of another independent hospital within a few miles of King Edward VII Hospital Windsor which they recommend should be renamed so that Slough may be identified with it The hospital needs of the district can they consider best be met on a voluntary basis by a combination of county and district councils, manufacturers and private persons determined to have in King Edward VII Hospital one large and efficient institution. It is suggested that a hospital building be erected at Slough comprising an out patient department casualty and dressing stations theatre and X ray department, and one or two small wards

INDEX TO THE LANCET Vol. I 1937

The Index and Title page of Vol. I 1937 which was completed with the issue of June 26th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of The Lancet 7 Adam-street Adelphi, W C.2 Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now and at the annual meeting of the society as a whole at Harrogate on July 5–9th two ways of using fruit were discussed

In recent years the canning industry has been much developed in this country and home canned fruit is usually of a high quality The effect of the acid juices of fruits on the tin surface of the cans is, however, from time to time a matter of anxiety to both consumers and their medical advisers Tin as a heavy metal, is naturally suspect as a possible but not very serious poison, and probably many minor illnesses that have occurred after the eating of tinned fruit have been attributed to tin poisoning A paper by W B Adam and G Horner of the Chipping Campden research station surveyed the present position Although it is the tin that goes into solution rather than the iron that is coated with it, the danger of poisoning is so small as to be negligible, for the element appears to be present under normal conditions in the human body The amount dissolved by the juice of fruit stored *in plain unlacquered cans is not* great, after storage for two years it only amounted to 50–100 mg per kg, while in double-lacquered cans the content was only 10–40 mg Vegetables, and especially asparagus, may take up more than this, but since experiments on himself by Schryver show that 130 mg per day can be taken without ill effect and without accumulation in the organs, the risk of chronic tin poisoning seems to be extremely remote The present recognised limit for tin in canned foods is 285 mg per kg, and it appears probable that new processes of lacquering may reduce the actual content to less than 10 mg per kg

“ Soft drinks ” made from fruit juices up to the present have been prepared almost entirely from imported fruits, although home-grown fruit is used to some extent for producing aerated juices Mr Vernon Charley of the Long Ashton research station deplored the widespread use of synthetic flavourings that bear little or no resemblance to those of the real fruit The American industry is said to use very little natural flavouring and this is probably why real fruit drinks, such as wine and cider, are preferred by persons of taste to any commercial soft drink, although they find the juice of lemons, limes, and oranges agreeable Serious attempts to make use of juice from English fruit—notably apples—are now being made on the lines developed in Germany, Austria, and Switzerland, using the Seitz-Boehi process, with an enzyme specific in its action on the pectinous compounds that interfere with filtration

Two other papers, by A Reavell and T N Morris, dealt with methods of concentration designed to retain the whole flavour of the fruit in its concentrated juice The former described evaporation by heat, the vapour coming off first—which may contain the more subtle flavouring constituents—being condensed and returned to the concentrated juice, after the bulk of the water had been evaporated to waste The other method is equally ingenious and interesting The juice is frozen slowly so that crystals of relatively pure ice separate, leaving a mother liquor of concentrated juice that has not been heated at all The development of methods such as these should produce concentrated juices that retain constituents of the fruit that are both æsthetically and dietetically desirable These should be useful as refreshing drinks for the sick-room, the nursery, and even the bar parlour

THE FISSAN POWDER-SPRAY —An apparatus has been produced by Genatosan Ltd (Loughborough Leics) which the makers believe will prove useful in the dry treatment of vaginal and cervical infections and of various skin conditions that are benefited by dusting with medicated powders It consists of a cylindrical container, to either side of which may be attached a guarded nozzle and a rubber bulb A light spray or a heavy deposit of powder may be obtained simply by reversing the position of these All the metal parts are chromium-plated and can be easily sterilised The makers have also prepared three Fissan powders—one absorbent, another medicated with icthyol, and the third with astringent and absorbent properties—supplied in cartridges fitting conveniently into the container and holding enough for about ten insufflations

NEW INSULATING MATERIAL.—Airpak Ltd (21, Cockspur street, London, S W 1) have put on the market a new insulating material called Tropal, which they picturesquely describe as “ sewn air ” It has a low coefficient of refrigeration—estimated at 0 23 B Th unit by the National Physical Laboratory—and its density is 3 lb to the cubic foot Its use is suggested for bandages in cases of rheumatism and sciatica, and as a lining for body belts or jackets Being made from kapok, sewn into a continuous piece of even thickness, it may be worked into quilts and pillows for asthmatics sensitive to feathers or wool

WE have received samples of BORWICK'S Cold Water LEMON BARLEY POWDER It is made from barley, lemons, and white sugar, and a public analyst's report confirms the manufacturer's statement that it contains no other ingredients The advantages of the powder are that the beverage is prepared in a few seconds by adding cold water, and that it is a convenient means of supplying sugar to children As a summer drink it is refreshing and palatable The makers are George Borwick and Sons Ltd , 1, Bunhill-row, London, E C 1

PRINCESS MARGARET ROSE HOSPITAL, EDINBURGH — The Scottish Women's Rural Institutes' Coronation gift of £700 to the Queen is at her command to be devoted to this hospital

Births, Marriages, and Deaths

BIRTHS

GUNTHER.—On July 14th, at Esher to Mavis H D Gunther M B Camb (née Carr) wife of Eustace Rolfe Gunther—a son

PARROTT —On July 11th at Margate the wife of H W Parrott, M D Lond of a daughter

MARRIAGES

DEVENISH—SCOTT —On July 15th in London Everard Devenish M S Lond F R C S Eng , to Marie Louise Scott.

HAYNES—MOORE —On July 17th, in London, William Secretan Haynes, B Chir Camb , C.M S to Bettie Mary only daughter of Comdr E E Moore R.N and Mrs Moore of Cheam

GOLDEN WEDDING

CASSIDI—DUNCANSON —On July 20th 1887 at St Mary's Church Dublin Francis Richard Cassidi M A M D D.P H T C D to Marion Elizabeth Duncanson, younger daughter of John Duncanson M.D , of Alloa

DEATHS

CREASY —On July 18th at ‘ Villa Chanteclair Cannes, Laurence Eliot Creasy M R C S Eng L R C.P Lond dear husband of Maud Creasy, and fifth son of the late Sir Edward S Creasy Chief Justice of Ceylon

LANG —On July 13th William Lang, F R.C.S Eng , of Cavendish-square W 1 aged 84

LONGFORD —On July 12th John Manning Longford L R C P , of Wigston near Leicester youngest son of the late C O D Longford, of Blackrock Co Dublin

MYLES —On July 14th at Dublin Sir Thomas Myles C.B M D Dubl F R C S I Hon Surgeon in Ireland to their late Majesties Edward VII and George V

SPRAWSON —On July 11th, at Hayling Island, Hants Francis Edgar Sprawson M R C.S Eng L D S late of Yeovil, aged 53

N B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

ADDRESSES AND ORIGINAL ARTICLES

THE ARTERIAL PULSE IN HEALTH AND DISEASE *

By Crighton Bramwell, M.A. Camb M.D Manch.
F R C.P Lond.
PHYSICIAN TO THE MANCHESTER ROYAL INFIRMARY

I—The Pulse

It was exactly half a century ago that Sir William Broadbent delivered the Croonian lectures In his choice of subject—The Pulse—I imagine that he must have been influenced by the trend of thought at the time. Marey's (1881) classical work ' Le circulation du sang à l'état physiologique et dans les maladies ' had just been published and the sphygmographs of Marey and Dudgeon had reawakened interest in the study of the pulse.

Dudgeon (1882) with his delightful sense of humour refers to the subject in the following words :—

> The physician of old made his diagnosis chiefly by observation of the pulse and tongue But as the tongue could be rapidly inspected and anyone could judge of its foulness or cleanness as well as himself he concentrated his attention mainly on the pulse in the feeling of which there was always scope for affecting the possession of peculiar skill and insight To the uninitiated who regarded the doctor as the depositary of occult knowledge and who received his dicta as though they were oracles there was something very imposing in his method of pulse palpation. The fingers of the right hand daintily grasping the patient's wrist while the doctor's eyes were riveted on the loud ticking gold chronometer he held in his left hand, his head gravely nodding the while synchronously with the arterial pulsations—all this formed a picture calculated to inspire beholders with reference and awe

Although palpation of the pulse is no longer so spectacular as of old, the information to be derived therefrom is none the less valuable.

It is remarkable how the invention of a new instrument may determine the particular sector of the battle front of knowledge selected for attack. In no department of medicine is this more evident than in cardiology Laennec's invention of the stethoscope, in 1819 focused attention on auscultation with the result that during the remainder of the nineteenth century cardiac murmurs and valvular lesions occupied a position of great prominence in cardiology—in fact, they took precedence over other manifestations of heart disease which to-day we consider to be of more fundamental significance.

The sphygmograph was popularised for clinical use by Marey in 1860 This instrument paved the way for an offensive on another sector of the front. It opened up new possibilities of investigating the cardiac mechanism, and thereby diverted the attention of clinicians from morbid anatomy to morbid physiology The pathology of the circulation began to be studied in the ward as well as in the post-mortem room.

It was in the transition period between these two epochs that Broadbent (1890) delivered his Croonian lectures on the pulse. The monograph in which he amplified those lectures is a valuable record of the state of knowledge at that time and, before attempting to survey the present position it is interesting to look back and to see what progress has been made in the last fifty years. Where was the front line in Broadbent's time and in what directions has it been advanced?

During this period progress has been made chiefly in two directions. By the use of instrumental methods we have learnt much about irregular heart action and about blood pressure. With the sphygmograph it was only possible to reconnoitre the stronghold of the cardiac arrhythmias and no great advance was made in that sector until the introduction of Mackenzie's polygraph in 1902 In fact it was not until Einthoven invented the string galvanometer that the position was finally consolidated.

Graphic records of the blood pressure were first obtained by Carl Ludwig in 1847 more than a century having elapsed since the pioneer experiments of Stephen Hales This method was first applied to man, in 1880 by von Basch, whose sphygmomanometer was improved by Riva Rocci in 1897 Lastly the auscultatory method of estimating the diastolic pressure was described by Korotkow in 1905

Oscillometric methods (Erlanger 1904 Gallavardin 1920 Pachon 1909) for the estimation of blood pressure have been extensively used on the Continent and in America but have never found much favour in this country In clinical medicine instrumental methods have an uphill fight to win their spurs Writing in 1902 five years after the introduction of Riva Rocci's sphygmomanometer even Mackenzie says : The trained finger is as yet the best guide we have in judging the pressure within an artery

To-day one might summarise the clinical data derived from pulse palpation under the following headings (1) frequency (2) rhythm (3) tension and character ; (4) condition of the arterial wall.

Let us now consider these four aspects of the subject

Pulse Frequency

To those types of tachycardia and bradycardia which are due to an abnormal heart rhythm I shall refer presently For the moment I will confine my attention to variations in pulse frequency due to speeding up or slowing down of the rate of impulse production in the normal pacemaker (the sino auricular node) These may be either physiological or pathological and it is not always easy to define with certainty the thin and wavering line which separates sickness from health.

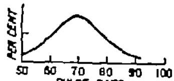

FIG. 1.—Normal frequency curve. The values are purely hypothetical and are not based on statistical results.

In all physical attributes no matter whether we are considering the pulse rate the body build the number of corpuscles in the blood the basal metabolic level, or the blood urea, there is a wide range of variation amongst normal healthy individuals For any one of these attributes we can plot what statisticians (Feldman 1923) call a normal frequency curve (Fig 1) The pulse-rate in the majority of healthy adults is in the neighbourhood of 70 per minute a few people have pulse rates under 60 or over 80 while occasionally one meets with an individual whose resting pulse-rate is under 50 or over 90 and who nevertheless appears to be in perfect health

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* The Lumleian lectures delivered at the Royal College of Physicians on March 9th and 11th 1937 Lecture II will appear in a subsequent issue

BRADYCARDIA

A slow heart rate is an advantage, for bradycardia makes it possible to double or even to treble the cardiac output, without an excessive increase in heart-rate Athletes who indulge in those forms of sport involving severe and prolonged physical exertion usually have bradycardia In a group of 28 Marathon runners, whom we (Bramwell and Ellis) examined at the Olympic Games in Amsterdam in 1928, the average heart rate was 58, whereas, in a corresponding group of sprinters, it was 66 Of the 28 Marathon runners 4 had heart rates under 50, while only 9 had heart rates over 60

The same is true of the animal kingdom (Clark 1927) Consider for example the hare and the rabbit The hare is an exceedingly athletic animal, and has a pulse rate of about 70 Its cousin the rabbit, a sedentary creature, has a pulse rate of over 200 The difference in rate in this case is due to the influence of the vagus After section of this nerve, the rabbit's heart rate was found to rise to 321 and that of the hare to 264 To compensate for the difference in pulse-rate, relative to its body weight, the hare's heart is three times as large as the rabbit's

Dr C M Billington (1937), who has had medical charge of the Cambridge crew during the past four years and had previously collaborated in this work with Dr C H S Taylor, informs me that he finds that, in the case of the heavy weights in the boat, the pulse rate slows about 12 beats per minute in the course of training This is more than one would have expected, considering that even at the beginning of training the men are fairly fit

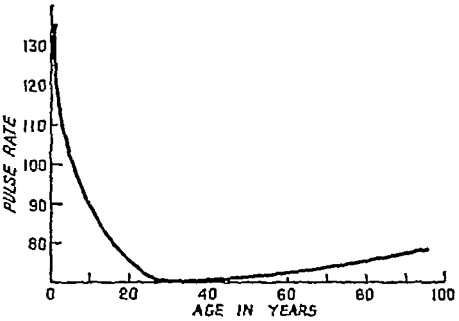

FIG 2.—Relation of pulse rate to age in 2521 normal subjects *Base line 70 beats*

Pathologically, sinus bradycardia may be associated with hepatic disorders, with raised intracranial pressure, and with various other conditions It is a common aftermath of febrile infections such as influenza

TACHYCARDIA

The causes of tachycardia with normal rhythm are more numerous There are the diseases of the heart itself, such as acute rheumatic carditis, pulmonary diseases such as pneumonia and pulmonary tuberculosis, certain other infections, both during the acute stage and during convalescence, focal sepsis and other conditions which give rise to neurocirculatory asthenia, the anxiety neuroses, and thyrotoxicosis In addition to these and other pathological conditions, sinus tachycardia due to reflex nervous and emotional causes is common in normal healthy individuals

In the febrile diseases the increased heart rate is proportional to the increased metabolism There are, however, certain notable exceptions, as for example diseases of the enteric group

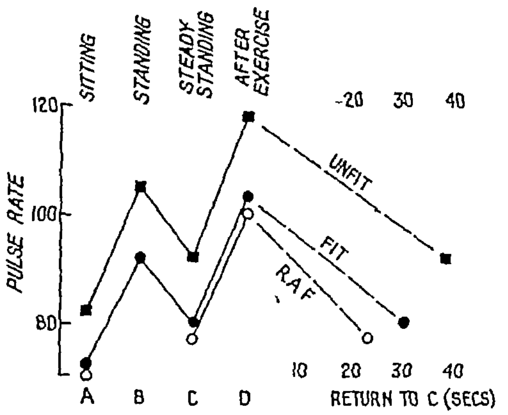

FIG 3.—The pulse response test in candidates classified as fit and unfit for service as pilots in R.A.F, the lowest curve being the average in 2413 fit pilots

AGE

Throughout childhood and adolescence the pulse rate steadily falls, while during the later period of life it tends to rise slightly Fig 2, which is taken from figures published by Tigerstedt (quoted by Mackenzie 1902), illustrates the relation of heart rate to age in a series of 2521 normal healthy individuals When I plotted this curve I was surprised to find that the transition from slowing to quickening does not occur until the twenty fifth year One was familiar with the fact that young men are less capable than their seniors of enduring severe and prolonged physical exertion At the Olympic Games in 1928 *only one man* under 25 years of age distinguished himself in the Marathon. The same is true of other feats demanding great endurance, as for example Arctic exploring In Nansen's expedition to the North Pole (Nansen 1897) the average age of his twelve companions was 33, and all were over 25 I had always imagined that this defect in younger men was due to lack of nervous rather than physical stamina, but the figures which I have put before you suggest that the cardio vascular mechanism does not attain its greatest efficiency until about the twenty fifth year

SIZE

Small animals have a higher heart rate than large animals In fact, if one excludes the athletic species,

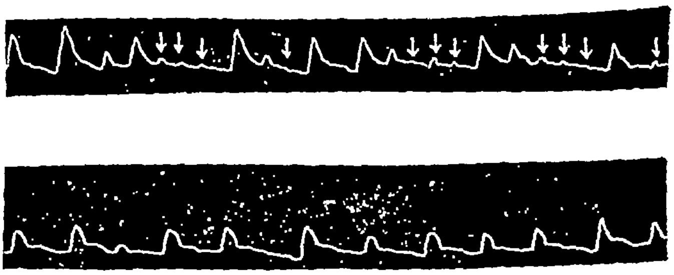

FIG 4 —Sphygmograms from a case of auricular fibrillation Upper before lower after treatment.

(Figs 4–8, 11 12 16 and 27 are reproduced from the author's book 'Heart Disease, published by Edward Arnold and Co) the heart-rate varies inversely with body weight This is shown in Table I

TABLE I

Heart rate in Mammals (*Clark 1927*)

	Heart rate	Body weight (grammes)
Mouse	070	25
Rat	420	200
Rabbit	205	2 000
Dog (small)	1 0	5,000
(large)	85	30 000
Horse	38	450 000
Ox	40	500 000
Elephant	48	3 000 000

You will notice that the heart-rate of the elephant is quicker than that of the ox. There appears to be a limit to bradycardia. If it were not so one would be tempted to visualise an animal so large that its heart would never beat at all!

RESPONSE TO EXERCISE

As a means of assessing physical fitness the response of the pulse to exercise has been extensively employed It should however be used circumspectly In testing soldiers during the war Lewis (1918) found that subjective symptoms such as dyspnœa and dizziness following exercise, were of greater significance than variations in heart rate.

In reference to rowing blues while recognising the value of physical efficiency tests Billington (1936) insists that the only way of forecasting the ability of the individual to stand the strain of the boat-race course is to consider his past racing achieve ments He says that, judged by the Dryer tests and by other American methods of finding a factor of fitness, none of the men who have rowed for Cambridge during the last four years would have been passed as fit!

Treadgold and Burton (1932) likewise found that the more elaborate methods of assessing cardio vascular efficiency had not show any advantage over the simpler methods employed at the Central Medical Establishment of the Royal Air Force.

They base their assessment on the blood pressure readings and the two following tests —

The pulse response test —This consists of taking (1) the steady sitting pulse-rate; (2) the pulse rate on assumption of the erect posture the increase in frequency indicating the efficiency of adjustment to change of position; (3) the steady standing rate (4) the pulse-rate immediately after a standard exercise which consisted of placing one foot on a chair and rising on to it 5 times in 15 seconds (5) the time required for the pulse to return to the steady standing rate This test could I think, be improved by varying the height of the chair in accordance with the stature of the candidate

The upper two curves in Fig. 3 show the type of response obtained in candidates classified as fit and unfit for service as pilots in the Royal Air Force The bottom curve shows the average figures in a group of 2413 fit pilots submitted to this test. In this group the initial standing pulse-rate was not taken Consequently it is impossible to complete this part of the diagram.

The 40 millimetre test —In this test the subject blows up a column of mercury in a U tube manometer to a pressure of 40 mm and holds it there as long as possible The pulse is recorded in 5 second periods the steady sitting pulse before the commencement of the test being taken as the basal figure

The significant factor is the behaviour of the pulse rather than the duration of the test. A healthy young adult can usually hold the pressure at 40 mm for over 60 sec. A pulse that does not rise by more than 12 or at the most 24 beats per minute, has proved in the Royal Air Force to be a valuable indication of cardiovascular efficiency

Rhythm of the Pulse

The problem of the cardiac arrhythmias has received so much publicity during the past thirty years that I need only refer to it very briefly

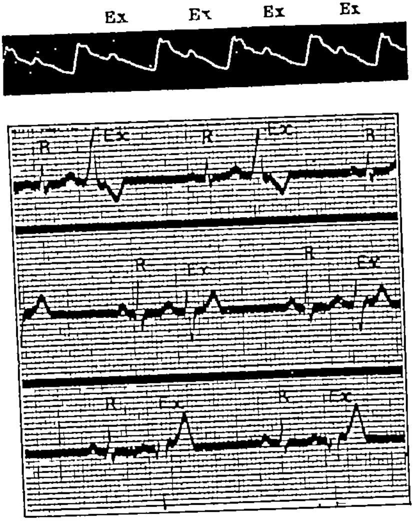

FIG 5.—Sphygmogram and electrocardiogram showing bigeminal heart action; each normal beat is followed by an extrasystole. The small wave (Ex.) on the downstroke of the sphygmogram is due to an extrasystole.

AURICULAR FIBRILLATION

In 1909 Lewis put the finishing touches to Mackenzie's fundamental work by proving that delirium cordis" in the human subject was nothing more nor less than the auricular fibrillation long familiar in animal experiments. In Broadbent's time it was generally believed that this peculiar irregularity of the pulse was the result of heart failure. Mackenzie's observations showed that it is the other way about It is not the heart failure which leads to fibrillation but the transition from normal rhythm to fibrillation which is often the determining factor in precipitating the onset of heart failure

To the clinical researches of Mackenzie we owe our knowledge of the rational use of digitalis in the treat ment of auricular fibrillation (Fig 4) This marks one of the greatest therapeutic achievements in cardiology in the past fifty years The use of quinidine in restoring normal rhythm though of less practical importance affords a very remarkable example of a drug producing a radical change in the mechanism of an organ

We are largely indebted to Ritchie (1914) for the elucidation of the allied condition auricular flutter

EXTRASYSTOLES

With regard to extrasystoles the position is less satisfactory Whereas occasional intermissions of the pulse due to extrasystoles appear to be of no pathological significance, the problem of bigeminal heart action in which every normal beat is followed by an extrasystole (Fig 5) remains unsolved From current text-books one would gather the impression that this disorder occurs most commonly in patients with auricular fibrillation who are suffering from digitalis intoxication, but, on analysing a series of 42 consecutive cases of bigeminal action, seen recently in consulting practice, I was surprised to find that the majority were not fibrillators but had normal rhythm Bigeminal heart action is a sure sign of myocardial damage, but, from the aspect of both prognosis and treatment, this disorder calls for further investigation

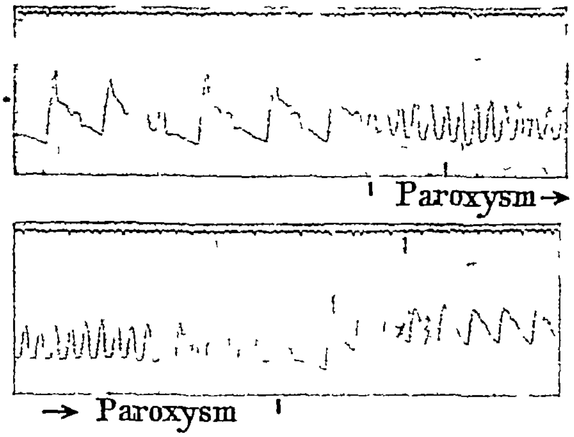

FIG 6.—A paroxysm of tachycardia followed by a period of normal rhythm and preceded by normal beats mingled with extrasystoles

Extrasystoles may arise in the ventricle, in the auricle, or in the junctional tissues Supraventricular extrasystoles are a not infrequent precursor of auricular fibrillation and of paroxysmal tachycardia For that reason they are generally of more significance than the ventricular type The two varieties can only be distinguished with certainty by an electrocardiogram

Closely related to the extrasystole is paroxysmal tachycardia This condition is illustrated by the sphygmogram reproduced in Fig 6, in which a short paroxysm of nodal tachycardia is followed by a spell of normal rhythm and preceded by extrasystoles, occurring sometimes singly, sometimes in groups of two or more Fig 7 was taken from the same patient as Fig 6 That the impulses which give rise to the beats constituting the paroxysm develop in response to stimuli arising from the same focus as those which produce the extrasystoles is shown by the similarity in form of the electrocardiograms

No satisfactory hypothesis has yet been formulated to account for the incidence of attacks of paroxysmal tachycardia, though sometimes they appear to be associated with flatulent dyspepsia The only drug which is of any value in the treatment of this disorder is quinidine

HEART BLOCK

Gaskell produced heart-block experimentally in the tortoise in 1883, the clinical condition having been clearly described by Galabin in 1875 Electrocardiography has done much to elucidate the mechanism of this disorder It shows very clearly (Fig 8) the lengthening of the conduction time in cycles preceding a ventricular lapse

Acquired complete heart-block usually manifests itself by pronounced bradycardia, but cases of congenital origin often escape recognition, since in them the ventricular rate may be in the neighbourhood of 70 per minute Without the aid of graphic records it is not possible to distinguish between auriculo ventricular and sino auricular block.

SINUS ARRHYTHMIA

This disorder is believed to be due to rhythmic variations in vagal tone Mackenzie emphasised the fact that, in young persons, this type of arrhythmia is of no pathological significance It may however occur as one of the manifestations of over dosage with digitalis, and is, therefore, not always a benign condition We still have much to learn regarding its clinical significance

I have been impressed by the fact that patients who have consulted me on account of simple fainting attacks often exhibit pronounced sinus arrhythmia. We had a striking example of this association when examining athletes at the Olympic Games in Amsterdam (Bramwell and Ellis 1931) There our routine procedure was to begin by palpating the pulse. In the case of one athlete, a weight-lifter, I called the attention of my colleague, Dr Ellis, to the unusual degree of sinus arrhythmia exhibited. Later, when we came to take this man's blood pressure, on inflating the armlet of the sphygmomanometer, he fainted. Doubtless the explanation of the association between simple fainting attacks and sinus arrhythmia is that both are manifestations of an over active vagal mechanism

PULSUS ALTERNANS

There is one other common type of cardiac arrhythmia to which I must refer—namely, pulsus alternans This condition cannot be recognised by palpation of the pulse, but is clearly shown in sphygmographic tracings Clinically it is easily recognised during the estimation of blood pressure When the pressure in the armlet is high, only the stronger beats get through, but, as the compressing pressure falls from the systolic to the diastolic level, the weaker beats penetrate the armlet and the pulse-rate suddenly doubles

Pulsus alternans is an important sign of left ventricular failure, but, apart from this condition, it may occur in any type of regular tachycardia such as paroxysmal tachycardia or auricular flutter Alternation is seen in the last few beats of the paroxysm illustrated in Fig 6

In the time at my disposal I have only been able to refer very briefly to the subject of the cardiac arrhythmias I have merely attempted to indicate that, although during the past fifty years a considerable advance has been made in this sector, the final objective has not yet been reached

Condition of Arterial Wall

I will defer for the moment consideration of the question of pulse tension and pulse form, and pass on to our fourth problem—the condition of the arterial wall.

ARTERIO SCLEROSIS

Thickening of the superficial arteries may be detected by palpation, and thickening of the retinal arteries with the ophthalmoscope Arterio sclerosis is the clinical manifestation of three distinct pathological conditions These may occur either separately or together They are athero sclerosis, hypermyotrophy, and Monckeberg s degeneration

Athero sclerosis starts as a fatty degeneration of the intima and later spreads to the media The other two lesions are confined to the muscular coat. *Hypermyotrophy* is a particularly interesting condition since it represents the physiological response to high blood pressure. The hypertrophy of the muscular elements in the arterial wall is not only analogous, but proportional, to the hypertrophy of the left ventricle. Turnbull (1914) states that from microscopic examination of the arteries in this condition it is possible to estimate the increase in the weight of the heart *Monckeberg's degeneration* consists of a calcareous change in the media which in advanced cases may convert the arteries into rigid tubes and render them opaque to X rays

It is important to remember that arterio-sclerotic lesions are not uniformly distributed throughout the body, and that thickening of the radial arteries is not necessarily associated with similar changes in the aorta. We must distinguish between focal and general arterio-sclerosis. When the arterio sclerotic process involves vessels supplying a vital organ such as the brain or heart, it may lead to cerebral or coronary thrombosis The clinical picture is then clearly defined. When however the more silent areas of the body are affected the diagnosis rests on evidence which is less direct.

MECHANICS OF THE PULSE-WAVE

Arteries may be classified in two main groups (Porier 1902) the elastic type, such as the aorta subclavian, and carotid and the muscular type, such as the radial and lingual Medium-sized vessels such as the axillary and common iliac are transitional in structure between these two types. The muscular arteries regulate the distribution of blood to the different organs of the body in accordance with their varying requirements while the aorta and its main branches constitute a great elastic reservoir the purpose of which is to lighten the work of the heart and to convert the intermittent cardiac output into a continuous capillary flow

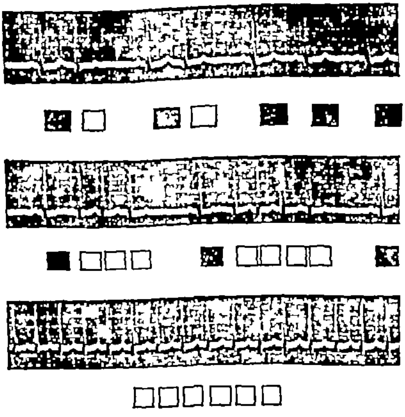

FIG 7.—Electrocardiogram from the same patient as Fig 6 The dark and light squares indicate normal beats and extrasystoles respectively The bottom record shows part of a paroxysm of tachycardia.

When the heart contracts the blood ejected by the left ventricle has to be accommodated in the aorta. This is made possible partly by displacement of blood to the periphery and partly by expansion of the aorta itself. With each contraction of the heart a wave of increased pressure passes along the arteries. This we call the pulse It is important to distinguish between the *transmission of pressure* within the arteries and the *movement of the blood itself*

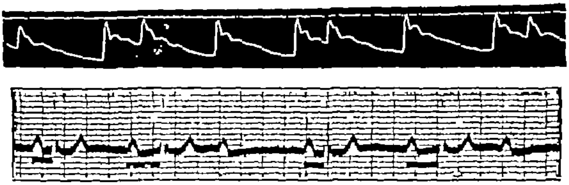

FIG 8.—Sphygmogram and electrocardiogram from a case of partial heart block. The black lines in the latter indicate the length of the P–R interval in the different cycles.

An analogy will help to make this clear When a railway engine starts to shunt a row of trucks standing in a siding one truck bumps against the next and a jolt is transmitted all along the line but whereas it takes a very short time for the shock to reach the guard's van at the far end of the train it takes the train, as a whole, a considerable time to travel this distance The slowly moving train corresponds to the blood flow while the jolt transmitted from truck to truck corresponds to the pulse-wave

The pulse-wave is like a ripple travelling on the surface of moving water Its movement is relative to the movement of the fluid in which it occurs. The rate at which the pulse-wave travels towards the periphery is equal to the velocity of the pulse wave relative to the blood stream plus the velocity of the blood stream itself or in the case of the waves reflected from the periphery the difference between the two since they are travelling in opposite directions

What I have said regarding the elasticity of the aorta applies in varying degree to all arteries of the body Each segment of the arterial tree helps to reduce the work of the segment proximal to it (and so ultimately of the heart) by providing in response to a relatively small rise in pressure accommodation for a considerable volume of blood The more elastic the arteries the smaller will be the rise in pressure required to produce a given increase in their volume. Regarded from this aspect, the efficiency of the arteries depends solely on their elasticity

PULSE WAVE VELOCITY AND ARTERIAL ELASTICITY

In the living subject it is not possible to measure arterial elasticity directly; but since the velocity with which the pulse-wave is transmitted along the arteries depends on the extensibility of the vessel walls the latter may be calculated if the former be known.

A formula relating pulse-wave velocity to arterial elasticity was put forward by Moens in 1878 This however was not of much practical value since it contained three unknown factors, none of which was easily measurable In 1922 A V Hill and I put forward a very much simpler formula—

$$\text{Velocity (in metres per second)} = 3\ 57 \Big/ \sqrt{\frac{\text{percentage increase in volume per mm Hg}}{\text{increase of pressure}}}$$

From this formula, a direct observation of the velocity of the pulse wave, in any segment of an arterial trunk, enables one to calculate, in absolute units, the mean extensibility of the vessels composing that segment

In a series of 74 normal healthy individuals of ages ranging from 4 up to 84 years, we found that the pulse wave velocity increased progressively with age (Bramwell, Hill, and McSwiney 1923) The values recorded ranged from 4 7 to 8 6 m per sec and amongst young individuals, at any rate, the deviation from the mean value is less than ±1 m per sec

TABLE II

Age (in years)	5	10	15	20	30	40	50	60	70	80
Mean velocity	5 2	5 55	5 9	6 2	6 75	7 2	7 6	8 0	8 3	8 55
Mean elasticity	0 47	0 41	0 36	0 33	0 28	0·24	0·22	0·20	0 18	0 17

Table II gives the mean pulse wave velocity at different ages, and the corresponding elasticity of the arterial wall, as calculated from the formula to which I have referred These values are represented graphically in Fig 9, from which it will be seen that between the ages of 10 and 60 extensibility is halved This means that, for a given output per beat, the *pulse pressure* will have to be about doubled and the systolic pressure considerably increased over this interval of years

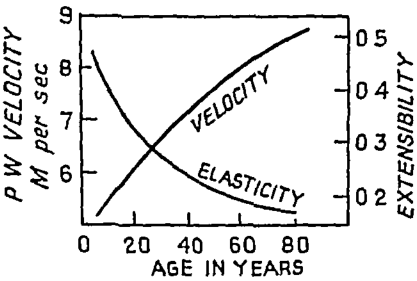

FIG 9.—Graphic representation of value given in Table II showing decrease in elasticity with age

The arterial wall is not a homogeneous structure but is composed of materials possessing different physical properties We may consider it as consisting of two systems of fibres—an extensible system (elastic tissue) and a relatively inextensible system (fibrous tissue and muscle) When the arterial wall is first put on the stretch, the extensible elastic system alone comes into play, and a considerable increase in the volume of the artery may be produced by a relatively small increase in pressure As the pressure in the artery rises, the inextensible system gradually begins to operate and limits further stretching of the arterial wall. This is exemplified by two *patients* whom I had recently under my care The first was a man of 72 with calcified arteries and a diastolic blood pressure of 80, and the second a woman of 23 suffering from chronic interstitial nephritis with apparently healthy arteries, whose diastolic blood pressure was 140 In both these *cases the velocity* of the pulse wave was 11 m per sec In other words, an apparently healthy artery at a pressure of 140 mm exhibited the same degree of rigidity as an extremely stiffened artery at a pressure of 80 mm

Roy in 1880 studied the relation between volume and pressure in blood vessels of cats, dogs, and rabbits He showed *that at high pressures* the extensibility of the vessel wall is greatly impaired.

In order to study the relation of arterial extensibility to blood pressure in man, we (Bramwell, Downing, and Hill 1923) made a series of observations on the pulse wave velocity in human arteries removed post mortem In Fig 10 the results of three typical experiments on arteries which presented no gross evidence of disease are represented graphically, the pulse wave velocity being plotted against pressure From the mean of these three curves, using the formula which I have given you, we can calculate the extensibility of an artery at different pressures, and we can plot a curve (Fig 11) showing the relation of the total volume of an artery to the pressure inside it

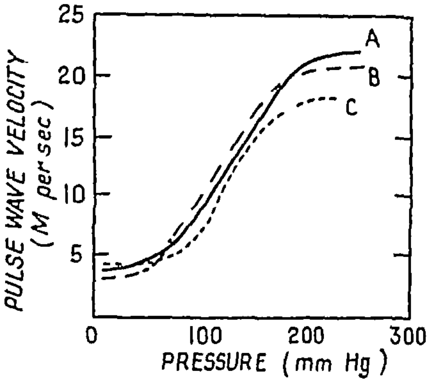

FIG 10 —Relation between pulse wave velocity and pressure in three "normal" individuals under 20 years of age

Let us now turn to the clinical application of these facts From Fig 11 you will see that when the diastolic pressure is 80 mm Hg a systolic pressure of 120 (that is to say, a pulse pressure of 40) will produce an increase in volume of the artery of about 8 per cent When, however, the diastolic pressure is 120 the arterial wall is already under considerable tension at the end of diastole It has become much less extensible, and a pulse pressure of about 120 —i e, three times as high—is required to produce a similar increase in volume

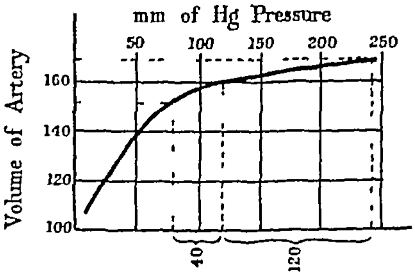

FIG 11 —Curve based on experimental observations

When the diastolic pressure is very high, even an enormous pulse pressure will enable the arteries to accept only a relatively small ventricular output Then, apart from the danger of rupturing diseased arteries by a very high systolic pressure, or of imposing an intolerable burden on the heart, by curtailing the oxygen supply to the tissues, the reduced ventricular output makes severe physical exertion impossible

I wish especially to emphasise the fact that a high diastolic pressure is just as potent a factor in reducing arterial efficiency as is arterio-sclerosis.

I have dealt rather fully with the question of pulse-wave velocity and arterial elasticity for two reasons In the first place this method of investigation helps to give one a clearer conception of the full significance of high blood pressure and secondly the measurement of pulse-wave velocity is a method applicable to clinical problems

Laubry (1925) and his associates have put forward a very strong case in favour of a group of clinical syndromes which they call les syndromes d aortite postérieure. Their contention is that arterio sclerotic lesions affecting the thoracic and abdominal aorta may give rise to pain dyspepsia and other symptoms and that the clinical picture so produced may closely simulate peptic ulcer and various other diseases They base their diagnosis largely on two special examinations radiography and the estimation of the velocity of transmission of the pulse wave. In health, the radial and femoral pulses are synchronous Asynchronism may be due to an increase or to a decrease in the rate of transmission of the pulse-wave in the aorta The former suggests sclerosis and the latter aneurysm

Hitherto but little progress has been made towards solving the problem of arterio-sclerosis One has only to study the recent survey of the position given by Cowdry (1933) and his associates to realise how far we still are from our objective on this sector of the battle front.

Pulse Form and Pulse Tension

THE NORMAL SPHYGMOGRAM

Since the form of the sphygmogram is determined by the variation of pressure in the artery it is convenient to consider together the problems of pulse form and pulse tension

The methods now at our disposal for measuring the systolic and the diastolic blood pressures enable us to speak about pulse tension with a degree of precision which was not possible fifty years ago; while the more delicate optical methods of registration which have been used in animals by Otto Frank (1895) Tigerstedt (quoted by Mackenzie 1902) Wiggers (1923) and other workers eliminate many of the mechanical artefacts inseparable from records taken with the more primitive types of sphygmograph. These optical methods are readily applicable to man.

Wiggers showed experimentally in dogs that the pressure changes in the large arteries near the heart are a faithful reproduction of those taking place within the left ventricle Let us therefore consider what information the clinical sphygmogram can give us concerning intracardiac events in man? In studying the pulse from this point of view it is important to remember that, in the course of transmission from heart to periphery the pulse wave is subject to the damping influence of the elastic arterial walls This tends to round off the rapid deflexions and so to modify the form of the sphygmogram, as you will see from Fig 12 in which the upper record is taken from the carotid and the lower one from the radial artery

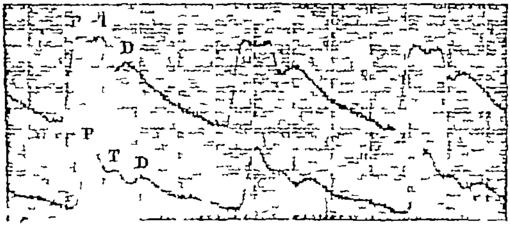

FIG 12.—Optical sphygmograms recorded from the carotid (above) and radial (below) arteries in a normal subject. P = percussion wave; T = tidal wave D = dicrotic wave

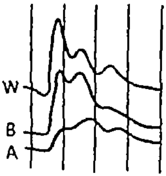

FIG 13.—Radial sphygmograms from patients with aortic incompetence or stenosis W = water-hammer type B = bisferiens type A = anacrotic type.

The typical sphygmogram consists of three waves The first or percussion wave (P) is due to the arrival of the pulse in the artery under the sphygmograph The mode of production of the second, or tidal wave (T) is less obvious. To explain its presence it has been suggested that ventricular systole occurs in two stages. During the first stage the ventricle so to speak merely takes the strain by developing just sufficient tension to put the walls of the aorta on the stretch During the second stage, it develops the additional tension necessary to expel the remainder of its contents. To me this explanation has never seemed satisfactory the premises on which it is based are unsound and I would suggest an alternative hypothesis

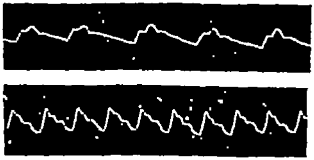

FIG 14.—Effect of acceleration of heart on anacrotic pulse-wave (Steell 1899)

We know that the pulse wave takes about 1/10 sec. to travel from the aorta to the radial and femoral arteries It is probable that reflected waves will pass back towards the aorta from various parts of the periphery Such reflected waves would be manifest in the central arteries in about 1/5 sec after the commencement of the upstroke of the sphygmogram This is the time at which the tidal wave makes its appearance I would suggest that the tidal wave represents the summation of the outgoing and reflected waves

During the ejection phase of systole, the left ventricle and the aorta are in free communication. Thus pressure changes in the aorta are transmitted directly to the ventricle, and are represented on the intraventricular pressure curve But the ventricle forms the dead end of the system Hence the reflected wave, being no longer able to travel centralwards, is again reflected and travels to the periphery as a part of the outgoing pulse-wave

THE ABNORMAL SPHYGMOGRAM

Under pathological conditions, the amplitude of, the excursion and the pressure gradient of the upstroke of the sphygmogram are determined chiefly by four things (1) the stroke volume—i.e , the output per beat—of the ventricle, (2) the rate at which the blood is ejected from the ventricle into the aorta, (3) the peripheral resistance, (4) the extensibility of the arterial walls

The most striking deviations from the normal type of sphygmogram are seen in patients with aortic incompetence and aortic stenosis In 1921 Feil and Gilder made some interesting observations on the radial sphygmogram in patients with these lesions

They described three types of pulse (Fig 13) In the " water hammer " type, the upstroke is abrupt and the tidal wave relatively inconspicuous In the " bisferiens " type, the gradient is less steep, and the tidal and percussion waves are of approximately equal height In the " anacrotic " type, the summit is formed not by the percussion but by the tidal wave In their paper they do not discuss the factors instrumental in producing these three different types of record , but I would suggest that they are as follows

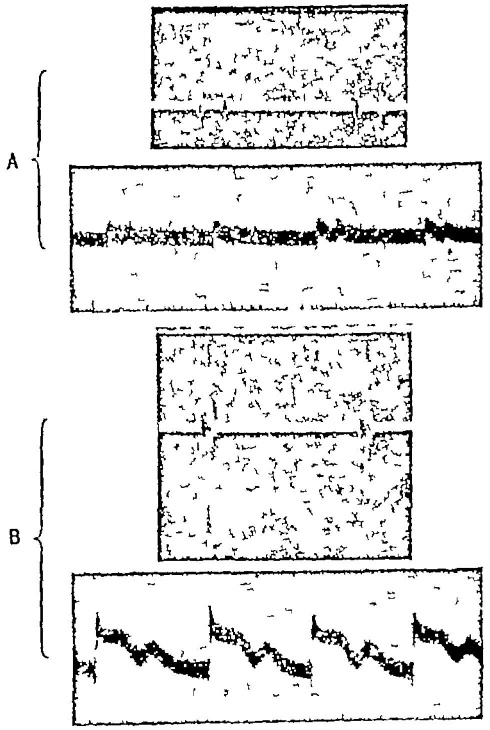

FIG 15 —Phono arteriograms and sphygmograms from patient with pulsus bisferiens A compressing pressure = 115 mm Hg and 100 mm Hg respectively Note double sound B compressing pressure = 40 mm Hg Time intervals 0 234 sec

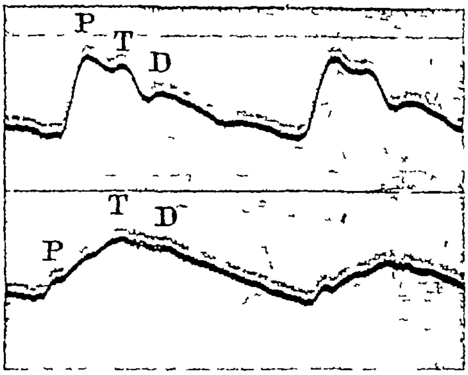

FIG 16 —Effect of high blood pressure on the carotid sphygmogram Above normal below from a hyperpietic subject showing maintained tension during systole P T D = Percussion tidal and dicrotic waves

The *water hammer pulse* is found in cases with free aortic regurgitation. Owing to the extremely low diastolic pressure, the ventricle has little resistance to overcome in discharging its contents Under these conditions, the maximal ejection occurs early in systole, while during the later part of systole the ventricular output is much reduced. After reaching its maximum early, the pressure rapidly falls This fall in pressure tends to neutralise the rise in pressure produced by the wave reflected from the periphery Hence the tidal wave is inconspicuous

The *anacrotic pulse*, on the other hand, is always associated with some degree of aortic stenosis Owing to the smallness of the aortic orifice, the ventricle is forced to expel its contents more slowly, and, throughout the ejection phase of systole, the rate of discharge of the blood into the aorta is much more uniform The ventricular pressure is still well maintained when the reflected wave returns from the periphery, and the summation of the outgoing and incoming waves causes the tidal wave to be higher than the percussion wave. Graham Steell (1899) has drawn attention to the important fallacy that any pulse that exhibits a tidal wave can readily be made anacrotic by the application of excessive pressure with the sphygmograph. He also points out that, in patients with aortic stenosis, the pulse loses its anacrotic character when the heart accelerates The two sphygmograms in Fig 14, which are taken from the same patient, illustrate this point

The *pulsus bisferiens* is intermediate between the water hammer and the anacrotic types It occurs in patients in whom some degree of aortic stenosis is combined with regurgitation An interesting point in connexion with the pulsus bisferiens is shown in Fig 15 (Bramwell and Hickson 1926) During the estimation of blood pressure, when the pressure in the armlet is only slightly below systolic, the two peaks of the pulse wave succeed in penetrating the compressed segment, but the dip between them is obstructed. Hence, with each heart beat, the artery below the armlet receives two impacts, each of which gives rise to sound When, however, the pressure in the armlet falls further, the two impacts fuse into one and only one sound is heard.

The effect of *hypertension* on the sphygmogram is similar to that of aortic stenosis This was clearly recognised by Broadbent From the point of view of the heart it matters not whether the additional work it has to perform be due to a constricted aortic orifice or to inextensible arteries Similarly, in patients who, from any cause, have a low diastolic and a high pulse pressure, the pulse tends to resemble that of aortic incompetence.

The way in which the ventricles may react to high blood pressure is shown in the lower of the two sphygmograms illustrated in Fig 16 the upper record being taken from a normal subject. The duration of the total ejection period, as measured from the commencement of the upstroke to the dicrotic notch is similar in the two records but in the normal subject the crest of the wave occurs 0·07 sec. from the beginning whereas in the hyperpietic the time interval is 0 21 sec In the normal subject the ventricular pressure begins to fall off early in systole but in the hypertrophied ventricle of the hyperpietic the tension is maintained throughout almost the entire duration of systole These two types of action might be compared to those of a horse or a bullock when starting to drag a heavy load. The horse starts off with a jerk but the bullock gives a slow and steady heave. By reducing its output during the initial stages of ejection the ventricle of the hyperpietic allows time for the first portion of the blood ejected to escape to the periphery before the last portion is thrown into the inextensible aortic chamber

In such cases the form of the sphygmogram may afford information regarding the capacity of the heart to meet its liabilities Just as a progressive fall in the systolic pressure is a bad omen since it signifies that the failing heart is no longer able to maintain its output against the increased resistance, so the pressure gradient of the front of the pulse wave may give some indication of the way in which the ventricle is responding to the increased burden.

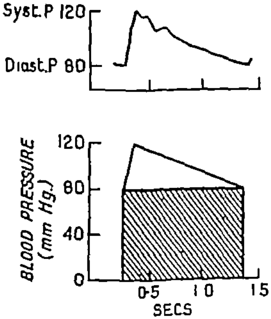

FIG 17 — Clinical and corresponding "absolute" sphygmograms from a normal subject with a blood pressure of 120/80 mm Hg

STUDY OF THE CENTRAL PULSE

I will summarise my reasons for believing that a systematic study of the central pulse in man would be worth undertaking

The pressure changes in the centrally situated arteries are similar to those within the left ventricle, during the ejection phase of systole. In fact in man they are the only reliable indication that we possess of what is taking place within that chamber of the heart

There are now available adequate optical methods for recording accurately the form of the sphygmogram in the central arteries.

Since the variations in the form of the central sphygmogram as met with in disease, afford an indication of the liabilities which the heart is being called upon to meet, and of its capacity to meet them they are capable of throwing light on the problems of cardiac diagnosis and prognosis

THE ABSOLUTE SPHYGMOGRAM

For convenience one generally refers to the sphygmogram as a pressure time curve This is not strictly accurate. It should be an expansion time curve for owing to the diminution in extensibility of the artery as the pressure rises, a given excursion near the top of the upstroke represents a much greater increase in pressure than an equal excursion near the bottom of the upstroke

A more accurate picture of the pressure variations of the pulse is given by what has been termed the absolute sphygmogram. This is a diagram (Fig 17) in which the ordinates represent pressure as measured by the sphygmomanometer and the abscissæ time as shown by the sphygmogram. The absolute sphygmogram consists of a rectangle representing the constant (diastolic) element of the pressure in the artery and a superimposed triangle representing the variable (pulse) pressure. The latter corresponds to the clinical sphygmogram, but depicts pressure instead of volume changes.

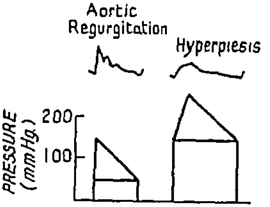

FIG. 18.—Typical clinical and "absolute" sphygmograms from cases of aortic regurgitation and hyperpiesis.

In Fig 18 two clinical sphygmograms with the corresponding absolute sphygmograms are given for the sake of comparison. That on the left is typical of aortic regurgitation, while that on the right is typical of hyperpiesis. These two records serve to illustrate the difference in behaviour of the arterial wall when the initial tension is high and low respectively

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ALKALOSIS WITH DISORDERED KIDNEY FUNCTIONS

OBSERVATIONS ON A CASE

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The salient features of the syndrome of alkalosis have been described by Hardt and Rivers (1923) Cooke (1932) Berger and Binger (1935) Oakley (1935) and Ryle (1935) The kidney function is known to be disorganised and the following facts have so far been elucidated The blood urea may rise very high, and fall with recovery The blood creatinine (Hardt and Rivers 1923 Berger and Binger 1935) the inorganic phosphates (Cooke 1932) and the inorganic sulphates (Berger and Binger 1935) may do the same The urea and sulphate clearances have been found to be reduced (Berger and Binger 1935) as well as the excretion of phenolsulphonephthalein. The urine contains no chlorides but this is not necessarily an aspect of renal failure for the plasma chlorides are said almost invariably to be very low This fall in plasma chlorides is accompanied by a rise in the bicarbonate and generally a rise in the total base of the serum (Cope 1936 Cooke 1932) This rise in total base and also the number of renal functions disorganised, indicate that the high blood ureas are not brought about by specific reabsorption of urea to raise the osmotic pressure of the plasma In other words these *are not instances of uræmia "par manque de sel"* (Blum and others 1928) The nature of the renal lesion, however, is quite unknown and no detailed analysis of it has up to now been made

The introduction of inulin as a measure of glomerular filtration (Shannon 1934, 1935a, b, Shannon and Smith 1935) has provided a new weapon for the investigation of kidney function. That inulin comes very near to measuring glomerular filtration in the normal human kidney now seems highly probable, and while it has not yet been proved to do so in the diseased kidney, it may be taken to come much nearer doing so than any other substance

The patient, a man aged 34, was first seen on Jan 13th, 1937 He was at that time wasted and dehydrated, and had been in a stuporose state for some days He was known to have pyloric stenosis due to an ulcer and to have been treated up to admission with Maclean's powders Before admission he had been vomiting intermittently for some time

On examination he was found to have latent tetany, his urine was alkaline, and contained practically no chlorides His blood pressure was 92/60 mm Hg, and his blood urea 160 mg per 100 c cm. On these findings a tentative diagnosis of uncompensated alkalosis was made In order to investigate his kidney function, a self retaining catheter was inserted and his bladder emptied A mixture of 25 g of inulin and 3 g of creatinine made up to 100 c cm with distilled water was injected intravenously, and 30 minutes later his bladder emptied once more and washed out twice with sterile distilled water Urines were then collected half hourly, the bladder being washed out on each occasion Blood was taken by vein puncture midway between the times at which the samples of urine were collected The patient was given no further alkaline medication, and with intravenous salines and abundant fluid and salt by mouth he improved for about a week and his blood urea fell to 100 mg per 100 c cm He then began to vomit uncontrollably for the first time since entering the hospital and he was accordingly operated on for the relief of the pyloric obstruction The operation was a complete success and the patient's recovery continued almost uninterruptedly On Feb 13th his blood chemistry and kidney function were re-examined and the patient discharged on the next day His systolic blood pressure did not rise above 100 mm Hg during his stay in hospital, except for a short period at the beginning of his second kidney function test, when it was found to be 110/80 This may have been due to apprehension At all events it was 98/70 later on the same day and again the day after

METHODS

The inulin used for these tests was purified by being boiled with charcoal as directed by H W Smith, J A Shannon, and H Chasis (personal communication), and was quite non toxic, as proved by the injection of large amounts into normal persons Blood was taken practically without constriction Serum was used for determination of the bases, plasma (sodium oxalate) separated rapidly under paraffin for chloride, bicarbonate, and phosphate determinations Plasma (heparin), also separated at once, was used for the determination of creatinine, inulin, and urea All three were determined in the same Folin Wu filtrate Inulin was determined both in blood and urine after acid hydrolysis by Harding and Downs's (1933) method, and urea by a xanthydrol procedure (Lee and Widdowson 1937) The other compounds or ions were determined by the methods used in previous investigations (Harrison 1930, McCance 1935, McCance and Widdowson 1936) All determinations, except those of serum potassium, were carried out in duplicate

RESULTS

Blood chemistry —A comparison of the patient's blood chemistry on admission with that on discharge is set out in Table I It will be observed that the hæmoglobin fell, but there was little change in the plasma proteins The fall in the blood urea and the inorganic phosphorus reflect the improvement in the kidney function, the rise in chloride and fall in bicarbonate the relief of the alkalosis The serum sodium was low on both occasions, the calcium was never high, and although the magnesium fell with recovery it was never grossly abnormal When first seen this case was diagnosed as one of uncompensated alkalosis, similar to those described by

TABLE I

Changes in the Blood Chemistry

Constituent	Determined in—	On 1st exam., Jan 13th	On discharge Feb 13th
Hæmoglobin	Whole blood	110 per cent	80 per cent
Urea		160 mg /100 c.cm	30 mg /100 c cm.
Proteins	Serum	6 25 per cent.	6 12 per cent
Sodium	"	309 mg /100 c cm	300 mg /100 c cm
Potassium	"	19 "	24 "
Calcium	"	8 1 "	9 9 "
Magnesium	"	3 0 "	2 1 "
Inorganic phosphorus	Plasma	8·0 "	3 5 "
Chlorides	"	248 "	348 "
Bicarbonates	"	101 vols per cent	64 vols per cent

TABLE II

Changes in the Kidney Function

Constituent	Clearances				Ratio CD/CA *	Ratio (clearance × 100) to inulin clearance on—	
	On admission		On discharge			Admission	Discharge
Inulin	9 3	c cm min	55 7	c cm min	6	100	100
Creatinine	11 1		88 9		8	119	160
Urea	3 2		45 7		14 4	34 5	82
Urea as per cent of normal by standard or max formula	7 4 per cent		65 per cent		8 8	79	117
Phosphates	5 35	c cm. min	18 9	c.cm min	3 54	57 5	34
Chlorides	0·024		2 55		100	0 26	4 6
Sodium	0 53		1 72		3 25	5 7	3 1
Potassium	11 5		10 3		0 9	124	18 5
Ultrafiltrable calcium	1 35		4 2		3 1	14 3	7 5
Ultrafiltrable magnesium	1 73		5 9		3 4	18 5	10·6

* Ratio CD/CA = *clearance on discharge/clearance on admission*

Notes

1 The minute volumes were 0 65 c cm on admission and 1 97–3 62 c.cm on discharge

2 The figures given for the clearances on admission are the mean of 2 periods The figure given for the clearances of the organic constituents on discharge are the mean of 3 periods Those given for the clearances of the inorganic constituents are the mean of 2 periods

3 The proportions of serum calcium and magnesium likely to be ultrafiltrable were taken from Watchorn and McCance (1932)

4 The ratio in column 3 is a measure of the improvement or otherwise in the clearances

Berger and Binger (1935) Oakley (1935) and others and due to the indiscriminate use of alkaline powders On the other hand Cope (1936) has recently described the results of his investigations of the blood chemistry in 'alkali poisoning caused by Maclean's powders and has concluded that a characteristic feature is a rise in total base calcium and magnesium in the serum A rise in the first two was certainly not present in the case under discussion and the rise in the last was small This suggests that the uncompensated alkalosis in this patient was due to the vomiting before admission rather than to the administration of alkalis

Renal function —The results of the kidney function tests are set out in Table II which should not be studied without reference to Table I The first column shows the clearances on admission" the second the clearances on recovery and the third the improvement or otherwise It is not legitimate to compare the urea clearances directly with each other owing to the unfortunate but unavoidable change in minute volume For this reason the urea clearances have also been calculated as a percentage of normal using the appropriate formula for the standard or maximum clearance A comparison of these figures is much fairer It will be noted that the inulin clearance improved sixfold, that of creatinine eightfold and of urea (expressed on the per cent. of normal basis) rather more The phosphate sodium ultrafiltrable calcium and magnesium clearances all improved between three and four times There was little change in the potassium clearance and the chloride clearance improved 100 times partly no doubt as a result of the increase in blood chloride (see Table I) Column 4 of Table II gives the clearances of the various constituents on admission expressed as a percentage of the inulin clearance and column 5 the same clearance ratios on recovery

DISCUSSION

A number of these results require a little explanation and discussion.

1 The improvement in the inulin clearance strongly suggests that the major disorganisation of function was a fall in glomerular filtration but there is no evidence at present as to how this was brought about. The change in blood pressure was probably quite insufficient to be the cause.

2 The creatinine clearance–inulin clearance ratios even on admission are of the same order as those obtained by Shannon and Smith (1935) and ourselves (unpublished observations) on normal persons. In normal persons the values obtained for these ratios suggest that in addition to being passed into the urine by glomerular filtration some creatinine reaches the urine by active tubular excretion. A comparison of the present results with those obtained in normal persons suggests that if this is so then the ability of this patient's tubules to excrete creatinine had fallen to about the same extent as the glomerular filtration.

3 The fact that the improvement in the creatinine and urea clearances is greater than that of the inulin clearance suggests that abnormally large amounts of the first two substances may have been diffusing back from the tubules when the patient was first seen *Unfortunately* the interpretation of the creatinine results is made very difficult by the uncertainty about the amount of creatinine which may have been excreted by the tubules on each occasion. The variations in urea clearance are also complicated by the change in minute volume. The fact that the urea clearance improved more than the inulin clearance is the only evidence obtained that any specific reabsorption of urea was taking place on admission (Blum and others 1928 1929)

4 It may be mere coincidence, but in any case it is worth noting that the improvements in the phosphate, sodium calcium and magnesium clearances should all be of the same order A further point of interest is that the improvement in all four clearances should be less than that of inulin—i.e that the clearance ratios should be less on discharge than on admission (columns 4 and 5 of Table II) If the inulin clearance be taken as measuring glomerular filtration then with recovery a larger proportion of these four ions filtered off in the glomeruli was being reabsorbed by the tubules. Contrast with this the observations on creatinine and urea (although the comparison with the latter is made difficult by the change in minute volume)

5 The sodium and chloride clearances and their relative improvements are of some interest particularly in connexion with their serum concentrations From columns 4 and 5 it will be seen how the amounts of the two elements excreted expressed as a percentage of the amounts filtered off in the glomeruli changed with the relief of the alkalosis and the rise in the serum chloride

6 The potassium clearances are peculiar Taken at their face value and making the usual assumptions about inulin and glomerular filtration they suggest that active excretion of potassium was in progress during the period of uncompensated alkalosis

It would be unprofitable in the present state of our knowledge of kidney function to discuss these results at greater length, but it is to be noted that the changes are very like those produced experimentally by alkalosis during salt deficiency (McCance and Widdowson 1936) It is interesting moreover that in spite of the obvious disorganisation of some of its functions the kidney is behaving quite normally in others—e g the reabsorption of chlorides Discrepancies however are rather a feature of all forms of nephritis including the sudden and recoverable disorganisations of kidney function such as are encountered in diabetic coma (McCance and Lawrence 1935)

SUMMARY

1 The kidney function of a case of uncompensated alkalosis has been investigated using inulin as the substance of reference The main cause of the uræmic state is thought to be a fall in glomerular filtration. The other changes in the clearances and clearance ratios are suggestive but require confirmation and further investigation.

2 No increase in total serum base or serum calcium was found in this case and only a small rise in serum magnesium

We are very grateful to Mr E. G Muir for permission to investigate this case One of us (E M. W) is indebted to the Medical Research Council for a part-time grant

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DACRYOCYSTORHINOSTOMY

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SINCE the time when chronic dacryocystitis was first treated by draining the lacrymal sac through an opening in the floor of the lacrymal fossa into the nose, a great variety of different procedures to achieve this end have been described. It is not part of my purpose to give a résumé of the history of the operation. It will be sufficient if I say that for a number of years I have taken the opportunity of observing how dacryocystorhinostomy has been treated by both eye and nose surgeons in various clinics in different parts of the world, and that the methods ordinarily observed were not sufficiently simple or expeditious

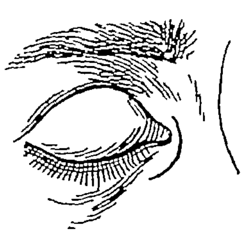
Over ten years ago I considered that the technique of Dupuy-Dutemps was probably the one most suited to our needs in India if only it could be speeded up It was soon discarded inasmuch as in a busy Indian clinic with large numbers of cases to deal with, one cannot afford to spend half an hour over a sac drainage case when effective relief can be afforded by extirpation in ten minutes or less Dacryocystorhinostomy had also the disadvantage that it could only be utilised when the lacrymal sac was of a cystic type As the bulk of our cases were unsuited to a nasal drainage procedure—e g, fibrous sacs, perisaccular abscess, fistula, &c—it fell into disuse here, but it was galling to think that those cases that were eminently suitable for dacryocystorhinostomy could not be dealt with by a quick and easy method

I determined recently to place on trial something rapid, simple, and as effective as the more bloody performances carried out through unnecessarily large facial incisions This meant a reduction of specialised apparatus and a purely orbital approach, since there did not seem to be adequate reasons for abandoning the treatment of chronic dacryocystitis to the nasal surgeons, and few eye surgeons—in India at all events—are sufficiently trained in rhinology to cope with a combined operation

The steps of the operation suggested are shown in the diagrams, and a few explanatory notes referring to the different stages will be enough to make matters clear There is one difficulty that may cause delay and on this account prejudice the ophthalmic surgeon accustomed to conserve time by electing to do extirpation of the lacrymal sac rather than a more complicated operation, and that is the suturing of the cut edge in the sac and in the nasal mucosa, but after a little practice this becomes much easier

The needle.—I at first used Dupuy Dutemps long handled needles (R and L), 7 mm. point to base, by Moria, but these are not necessary, any fine long needle-holder will do, such as my needle holder for corneal grafting made by Weiss, with a large-eyed fully-curved 6–7 mm point-to-eye needle The makers grade a half circle needle 6 mm point to-eye as a 12 M/M needle Unfortunately they are difficult to obtain and when suitable needles are not available, this step of the operation must be carried out *secundem artem* The procedure is much easier when lateral hinged flaps are adopted (Figs 6 and 7) than when tongue flaps are used Almost any small half-circle needle will do with the lateral flaps Alternative methods of suturing will suggest themselves to those not in possession of suitable needles Perhaps the best means of overcoming the difficulty of passing a point of suture in a small deep hole is to use a straight eyeless needle of 3–5 mm—i e, just a sharp point on the end of the suture material These are not on the market—and the eyeless needles such as the Souttar, the Mersuture, or the Grüss rethreadable which are sold are unsuitable in size—but I have asked one or two firms to make some and no doubt sooner or later they will be obtainable When necessary, one can make them by cutting a platino-iridium or nickel hypodermic needle of selected bore 3–5 mm from the point The point should be suitably shortened and sharpened beforehand The ligature, on which a single knot has been tied, is then passed through the lumen from the bevelled end When the knot enters the short tube the blunt end is cramped on to the ligature with a forceps so that the knot prevents a pull through It can be done without a knot and makes a neater job since a smaller bore needle can be used, but this requires more skill A sharp pointed metal tipped suture such as this can be used like a boot lace

The operation—A curved incision is made as shown in Fig 1 The usual view of the wound in extirpation of the lacrymal sac is shown in Fig 2, with the Muller's retractor in situ and the internal tarsal ligament cutting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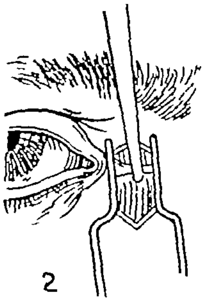
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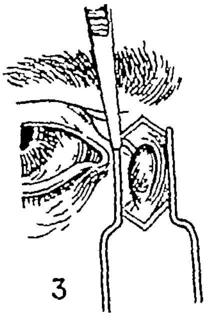
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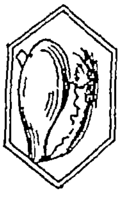
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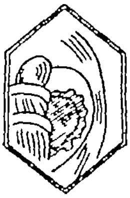
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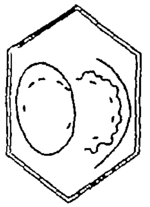
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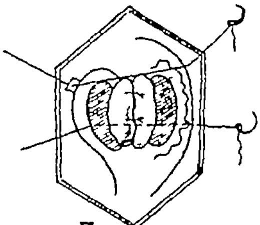
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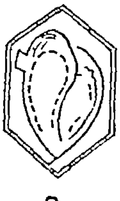
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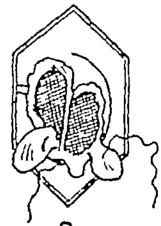
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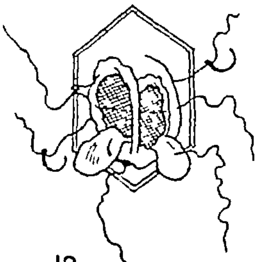
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es the exposed hexagon at the junction of its upper middle thirds The initial curved incision may be htly larger than that *used for extirpation if desired,* not more than three-quarters of an inch long The rnal tarsal ligament is divided at its bony insertion l the fascia covering the sac split along its insertion into ta lacrymalis anterior (Fig 3) The periosteum has n incised along the crista and subperiosteal elevation the sac *from its bed effected with a blunt dissector* e sac is displaced outwards and the bony floor of the rymal fossa exposed The prominent lower portion of crista is seen with the gutter in the dense frontal ocess of the superior maxilla immediately behind it ig 4) More posteriorly is the thin lacrymal bone ich *should be very carefully dealt with in separating* e sac The next step consists in the removal of a fairly rge window of bone from the floor of the fossa (Fig 5) his is most readily accomplished by introducing a small ttened blunt hook through a dehiscence of the suture ne in the lacrymal bone *and using it to separate the* sal *mucosa from* its deep aspect The hook is then rther employed to pull off a scale of bone towards the perator If the lacrymal bone does not present a rack or dehiscence that enables one to raise the first hip of bony shell it may be given a sharp but gentle ap with the *raspatory as if* breaking the shell of n egg

The procedure of removing the bone is in fact similar to hat of removing the shell of a hard boiled egg At this stage a small pack of cocaine—2 per cent freshly prepared—is placed over the bony *aperture* and allowed to act for a *few minutes* on the nasal mucosa The scaling of the lacrymal bone is then completed with a blunt hook and forceps It is convenient in some cases at this stage to use a fine gouge or nibbling forceps, or a Hartmann s angular nasal dressing *forceps* Any convenient forceps will do *but* care must be taken to avoid tearing the nasal mucosa when removing flakes of bone this is sometimes difficult It is a mistake to try nibbling away the tough portion of the groove floored by the frontal process of the superior maxilla, with the *idea of extending the aperture laterally* One should rather extend it well down towards the posterior wall of the bony canal In some cases this may decide us in doing tongue flaps downwards The sac during this removal of bone is held back by a double blunt hook or any convenient retractor The outlines of the apertures that are made in the posterior internal wall of the sac and in the nasal mucosa lining the lacrymal bone are shown in Fig 6 The flap in the sac is easily cut with curved scissors that in the nasal mucosa is not so easy to make A fine sharp single- or double-toothed forceps, of the *Bader* or of the Landolt fixation forceps type *may be* used to pick up the mucous membrane near the upper limit of the aperture in order to start the incision with a knife It is then easily completed with suitable curved scissors The hinge flaps are approximated and united by *two points* of suture (Fig 7) Excess of mucous membrane is cut off before suturing

Figs 8 and 9 show an alternative but more difficult method of establishing the opening by adopting tongue flaps. Fig 10 shows catgut sutures passing through the anterior lip of the opening *in the sac on the one side* and the periosteum *half way* down the exposed part of the crista on the other (The figure illustrates the tongue flap type of operation but the same method of dealing with the anterior lip is used if lateral flaps are employed.) Another suture is shown passing through the cut end of the *internal tarsal* ligament and the periosteum of the crista at the point of its old insertion. This suture may be of catgut or in order to save time it may be of horse hair taking a bite of the skin wound on either side and thus acting as one of the *wound* closing points of suture The skin wound is closed with three points of horse-hair suture It is advisable to keep a dressing on the wound with fairly firm pressure till the third day At the first change of dressings—and the *change may be made earlier than the third day if* desired—drops of zinc sulph 0 5 per cent chloretone 0 5 per cent and adrenaline (♏ 10 to the ounce) are instilled The stitches may be removed on the fifth day and 0·5 c cm of the above solution very gently injected into the *lower* punctum with a suitably small pipe This will demonstrate the freedom of the drainage Thereafter weak astringent drops such as the above may be prescribed for a fortnight or so

The small operation outlined above is as bloodless as an ordinary extirpation It is somewhat more difficult to do well and takes slightly longer, but in cases suited to dacryocystorhinostomy—e.g dilated sac cases of the *middle-age groups*—it is preferable to an extirpation and well worth the little extra time spent.

THE RELATION OF VITAMIN E TO THE ANTERIOR LOBE OF THE PITUITARY GLAND

By M. M. O Barrie, B Sc

(From the Physiological Laboratories of the British Drug Houses Ltd London)

Vitamin E is the *fat-soluble factor* described by Evans (1927) and proved *to be necessary for the normal course of gestation* in the *female* and *for the* fertility of the male rat It has been used with success in the treatment of abortion in pigs (Bay and Vogt-Möller 1934), cattle (Tutt 1933) and man (Currie 1936) Its exact mode of action is unknown and the rationale of its therapeutic use for the achievement of normal pregnancy obscure In rats kept on a E deficient diet from the time of weaning and mated during œstrus with normal males of proved fertility fertilisation can be shown by cessation of the œstrous cycles and by the detection of blood in the vagina *on the thirteenth day of gestation. If the animal has insufficient stores of vitamin E some or all of* the fœtuses formed will be resorbed.

It has been recognised for some years that the anterior lobe of the pituitary gland exerts a controlling influence on the function of the sex organs Firor (1933) Houssay (1935) Robson (1936) and others found that hypophysectomy of animals during pregnancy produces abortion with failure of lactation but that if only the posterior lobe of the pituitary be removed pregnancy parturition, and lactation are unaffected. The *similarity of* the effects of hypophysectomy to those *produced by* vitamin E deficiency suggested that the two phenomena might be related

EFFECTS OF VITAMIN E DEFICIENCY ON OFFSPRING

In a recent series of experiments carried out in these laboratories (Barrie 1937) it had been found that *many of the animals reared on the* E deficient diet exhibited *an initial fertility and produced a* litter of living young before sterility accompanied by the resorption typical of E deficiency set in In most cases the young of these rats failed to grow properly and about a fortnight after birth were obviously stunted and abnormal in appearance Rats which had become sterile through E deficiency when treated with small and apparently inadequate doses of a vitamin E concentrate produced litters which also showed *similar degrees of abnormality* In other instances the rats failed *to rear their young* owing to partial or complete failure of lactation.

Tables I and II summarise the record of 44 litters born to E deficient rats before they had become sufficiently depleted of the vitamin to resorb the whole litter before the completion of gestation. The record of these litters is compared with that of the first litters of 44 normal rats. These does were fed *on a complete diet from birth* The *average number* per litter of the E-deficient rats is *not significantly* changed but is considerably less than the average number for the second litter of a normal rat which ranges between 7 and 13 Stillbirths are very rare among rats and none occurred in the 44 normal cases recorded. Normal rats generally rear all their young, but occasionally they become nervous and kill some of the litter if disturbed and this accounts for the 7 1 per cent mortality in the normal young The E deficient rats are handled every day and are consequently very tame and unlikely to kill their litters if disturbed

All the young rats were weighed and examined daily and it was found that the litters of E deficient rats grew abnormally slowly and at 14 days after birth were about half the weight of animals born of normal does fed on a diet rich in vitamin E (Fig 1)

At first these young, though small and often very fat, were normal in appearance, but, usually about 18–20 days after birth and sometimes as early as the fourteenth day, the animals looked definitely abnormal The affected rats were always undersized and had sparse fur which was soft and unusually white The first symptom observed was a weakness in the feet and consequent inability to grip a rod The animals moved slowly, their eyes were dull and their general habits indicated that they were of subnormal intelligence In most cases first the hind legs and later the fore legs were affected. The symptoms gradually increased in severity, and the animal became unable to spread its toes and dragged its feet when it walked (Fig 2) On the third day, severe cases showed characteristic carpopedal spasms, developed intermittent convulsions and finally died.

Examination of the thyroids of 82 abnormal rats revealed in every case a hypoplastic gland with enlarged vesicles filled with colloid, and in many cases there was a considerable amount of fibrous tissue between the vesicles Figs 3 and 4 show the difference between the thyroid of the abnormal young rat shown in Fig 2 and that of a normal rat of the same age

TABLE I

Record of Litters of Partially Vitamin-E Deficient Rats

Animals	Treat ment.	Total of young	Still born	Weaned	Abnormality
3	None	9	0	0	No lactation
6		40	1	0	Lactation failed
4	,	31	2	2	Lactation scanty
23		116	4	13	Abnormal young
3		10	0	0	Killed by mother
5	,,	23	7	6	No obvious abnormality
Total 44	None	229	14	21	—

Record of Litters of Normal Rats

Adequate diet with vitamin E from birth

Total 44		295	0	274	Normal

Lactation is often scanty in the E deficient does and may stop suddenly It is not unlikely that the three animals which killed their young did so because they were not lactating

TABLE II

Comparison of the Litters of Vitamin-E Deficient Rats and Normal Stock Rats

	E deficient rats	Normal rats
Average per litter	5 2	6 7
Stillbirths (per cent)	6 1	0·0
Case of deficient lactation (per cent)	29 5	0 0
Litters containing abnormal young	52 3	0·0
No of animals reared (per cent)	9 1	90 9

The litters of the E deficient rats were born before the animals had been long enough on the deficient diet to become sterile The figures for the normal rats represent the record of the first litters of 44 rats fed on a complete diet

The skulls of these rats were abnormally soft and cut like paper and ossification was noticeably less than in normal rats of the same age This condition is very similar to that described by Mortimer *(1937) in hypophysectomised rats*

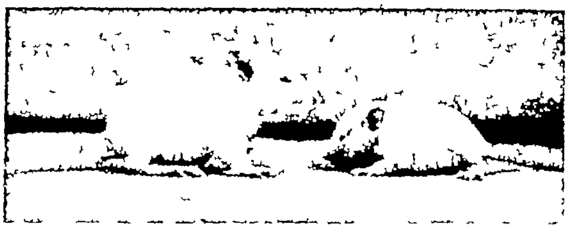

FIG 1.—A normal rat aged 16 days with a E deficient rat of the same age

Evans and Burr (1928) described a form of paralysis in the young of E deficient rats and ascribed it to some disorder of the nervous system Ringsted (1935) found that adult E deficient rats developed a paralysis of the hind limbs, which he considered to be neuropathic in origin No histological examination was made in either case, so that it is impossible to tell whether the paralysis observed was in any way comparable with the present observation Typical examples of the abnormal young observed in this laboratory showed no degeneration of the spinal cord when examined by the Weigert Pal or Marchi techniques

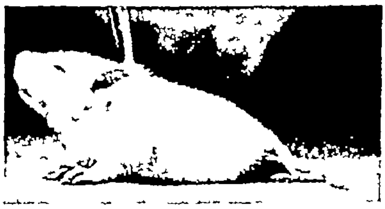

FIG 2 —An abnormal rat aged 20 days The back legs are weak and unable to support the body The front feet show a developing carpopedal spasm The nose is upturned and the animal is abnormally fat.

The anterior pituitary glands of 20 of these rats were examined and it was found that there was some degranulation of the acidophils and that some of the basophils had a spongy appearance There was a considerable number of empty cells which were probably acidophils

The carpopedal spasm shown by the abnormal rats suggested that there might be a decrease in the serum calcium Since it was found impossible to obtain sufficient serum for an estimation from the young animals, determinations were made on the blood of adult sterile animals The sterile animals were found to have an average serum calcium of 11 5 mg per 100 ml compared with a normal value of 12 6 mg per 100 ml. This difference is not considered significant, and it is believed that the carpopedal spasm was not caused by a low serum calcium, as the symptoms were not alleviated either by subcutaneous injection of 1 c cm calcium gluconate (10 per cent solution) or by 0 5 c cm of a 5 per cent solution of calcium lactate and 10 international units of vitamin D given by mouth The thyroids of the adult sterile rats used for the calcium estimations showed exactly the same appearance as those of the abnormal young (Figs 5–7)

THE UNFERTILE DOE

Does which are so deficient in vitamin E that they are unable to produce a litter respond to treatment with concentrates of this vitamin, and if adequately dosed in the early stages of pregnancy will produce and rear a litter of normal young the same has been observed in the case of partially deficient animals

In these sterile does, ovulation and œstrous cycles are apparently normal. The animal can be mated with a normal male and implantation verified by observation of blood in the vagina on the thirteenth day after mating The animal increases in weight and the fœtuses can be felt in the uterus but are gradually reabsorbed from the 15th to the 21st and in a few cases even up to the 28th day In one case in which an animal died on the 19th day of pregnancy the uterus was examined and found to contain traces of seven resorbed fœtuses and two normal ones which would probably have been born at 21 days This case shows that birth of living young is not necessarily proof that the animal has an adequate supply of vitamin E Twenty three sterile does either died or were killed for histological examination. With one exception the thyroid gland was found to be hypoplastic This confirmed the findings of Singer (1936)

The anterior pituitary glands of these rats have been examined by the Wolfe and Cleveland or by the Severinghaus technique (Wolfe and Cleveland 1932 Severinghaus 1932) The Wolfe and Cleveland method involves Regaud's fixative followed by Mallory's aniline blue orange G stain In Severinghaus's method the glands are fixed in an osmic acid, dichromate mixture and finally stained with acid fuchsin and methyl green acid violet For general use one or other of these two methods has been employed as both give excellent differentiation of the cells and granules In a few cases the second Severinghaus method has been used (Severinghaus 1932) as this reveals the Golgi apparatus and gives good differentiation of the mitochondria from the acidophilic granules With these differential stains marked changes have been found in the anterior pituitary glands of these rats

The acidophils were very small and degenerated they showed no distinct granulation; in many cases the nucleus was pyknotic and the cytoplasm stained evenly with the acid stain In several cases a large number of these degenerate cells were found in the region of the cleft. The gland also exhibited large numbers of empty cells some of which could be identified as acidophils some of the others were probably basophils There was some degranulation of the basophils, and the anterior lobe had a general spongy appearance in some cases owing to the large number of empty or partly empty cells

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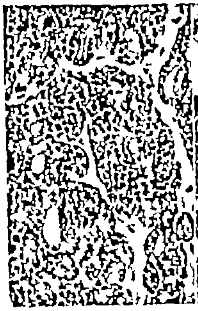

FIG 3.—Thyroid of normal rat aged 21 days There is very little colloid (× 100)

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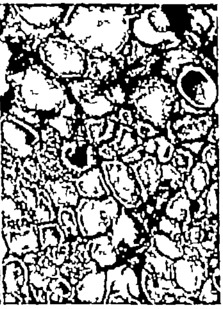

FIG 4.—Thyroid of an abnormal rat aged 21 days The magnification (× 50) is half that of Fig 3 Note the enormous colloid filled vesicles and the darkly stained fibrous tissue which separates them.

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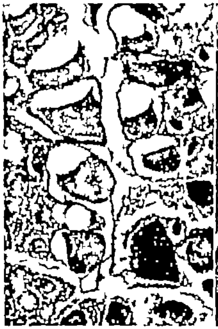

FIG 5.—Thyroid of an adult E-deficient rat. (× 100) The vesicles are filled with colloid and there is some fibrous tissue

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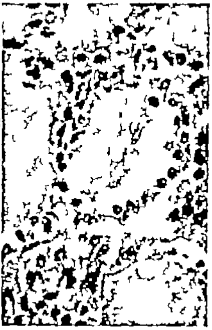

FIG 6.—Normal adult thyroid (× 500) The cells are actively secreting and are large with well marked nuclei

One gland examined was particularly interesting as it was obtained from an animal whose mother had been partly E deficient and the animal had never had access to a diet containing adequate vitamin E On attaining puberty it was mated with normal males but although it had six normal matings, placentation never took place The animal retained a youthful appearance and had silky fur instead of the normal hard fur characteristic of the adult rat It was killed and its organs examined histologically The thyroid was very hypoplastic and the ovaries showed no normal follicles The anterior pituitary appeared at first examination to be entirely undifferentiated as the acidophils were almost completely degranulated and some of them were very small. A few of the acidophils were vacuolated and there were many empty cells. There were very few basophils and these were only sparsely granulated. The general appearance was like that of a gland composed entirely of cells of the chromophobe type

There is no doubt that vitamin E alone will cure the sterility produced by its deficiency and it has been proved in this laboratory in large series of rats that both sterile animals and animals which have had litters of cretinous young will produce and rear normal litters if adequately dosed with a concentrate of vitamin E within the first three days of pregnancy and it can be assumed that these thyroid and pituitary changes observed in E deficient animals are entirely due to the absence of this vitamin. It is known that the secretions of the anterior lobe of the pituitary gland are necessary for normal pregnancy and since deficiency of vitamin E affects both gestation and the anterior pituitary it may be assumed that this vitamin is necessary for the normal function of the gland.

DISCUSSION

It is suggested that failures of the normal reproductive process of lactation and of the activity of the thyroid gland in E deficient rats show that the secretion of the gonadotropic, galactotropic, and thyrotropic hormones by the anterior lobe of the pituitary gland is impaired. This evidence is further substantiated by the histological findings The basophils of the anterior pituitary of sterile doses show some degree of degranulation, and since castration results in degranulation and vacuolation of these cells in rats (Ellison and Wolfe 1934), it may be presumed that there is some decrease in their activity Similar changes in the basophils have been found to follow castration in man (McCallum 1936)

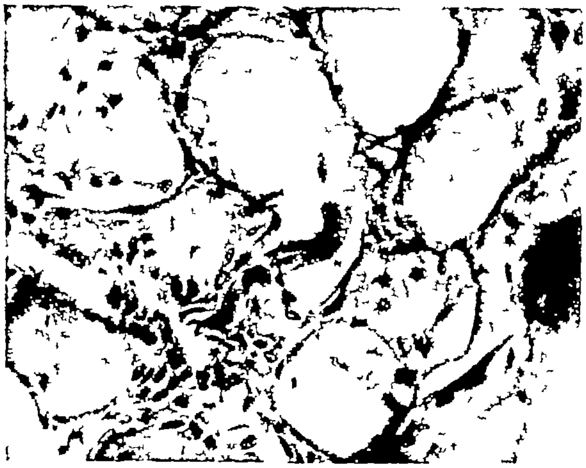

FIG 7.—Hypoplastic thyroid of sterile E deficient rat (adult) (× 500) The accumulated colloid has flattened the cells round the vesicles

In the sterile rats and in the abnormal young the acidophils are degranulated, and in extreme cases degenerated The acidophils in the rat are associated with the activity of the thyroid (Severinghaus 1933), and it has been found that in man they are associated with growth, since an eosinophil adenoma is often found in cases of gigantism or acromegaly (Cushing 1933) In mice it has been found that congenital dwarfs of the Dunn strain have no acidophilic cells in the anterior pituitary (Smith and MacDowell 1930) The stunted growth and abnormal appearance of the young rats, combined with the pituitary and thyroid changes observed, suggests that the condition is probably pituitary dwarfism with secondary cretinism.

The site of secretion of the galactotropic hormone is unknown. As would be expected the acidophils of the pituitary glands of the E deficient young are degranulated and decreased in size, thus accounting for the stunted growth and the inactive state of the thyroid in these animals

Similar changes in the acidophils of the male rat anterior pituitary have been described by Severinghaus, Smelser, and Clark (1933) following thyroidectomy The histories of the litters of partially E deficient rats given in Table I indicate that the galactotropic and thyrotropic factors are influenced by deficiency of the vitamin before the gonadotropic, because the rats are able to produce an approximately normal number of young but are unable to rear them

SUMMARY

The pathological changes produced in female rats and their young by deprivation of vitamin E are described and the conclusion is drawn that, in the rat, vitamin E is necessary for the normal function of the anterior lobe of the pituitary gland. Female rats which are partly deficient in this vitamin will produce a living litter but are unable to rear it

The young grow more slowly than normal young rats and are obviously abnormal in appearance a fortnight after birth, a few days later flaccid paralysis of the limbs and often spasms of the feet are observed, and the animals die within a few days In 82 of these young rats, in which microscopic examination of many of the tissues has been made post mortem, hypoplasia of the thyroid was found in every case The anterior pituitary has been examined in 20 cases and degenerative changes have been found. It is suggested that the condition is one of pituitary dwarfism with secondary cretinism.

In 23 female rats in which sterility had been produced by a more complete deficiency of vitamin E microscopic examination of the tissues showed hypoplasia of the thyroid and degranulation of the acidophils and basophils of the anterior pituitary gland. When given an adequate dose of a vitamin E concentrate, however, such sterile animals will produce and rear a litter of normal young

I wish to acknowledge the help I have received from Miss M Allanson in the examination of the pituitary glands and the coöperation of my assistants, Miss I Harley and Mr W R Searle, throughout the experiments My thanks are also due to Mr F H Carr, D.Sc, and Dr S W F Underhill for their encouragement, and to the directors of The British Drug Houses Ltd for permission to publish this work.

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EXTREME DEGREE OF LEUCOCYTOSIS IN WHOOPING-COUGH

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A BOY, aged 5½ years, had his tonsils removed on Oct 31st, 1936 A cough developed shortly afterwards He frequently vomited with the cough. There was a small amount of sputum He was admitted to hospital on Nov 6th, 1936

His past history was uneventful On examination his face was pale and his alæ nasi were working The respiration rate was 70–80 and the temperature swung between 101° and 103° F A striking feature was the pallor and lethargy which the child displayed There was slight impairment of percussion note over the base of the right lower lobe Pleural rubs were audible in the right axilla and numerous râles were to be heard all over the right lung The heart was normal The tip of the spleen was palpable on deep inspiration but the liver was not felt There was no lymphatic gland enlargement. In the tonsillar fossa remains of sloughs were to be seen A diagnosis of post tonsillectomy broncho-pneumonia was made Radiography of the chest confirmed the presence of pneumonia in the right lower lobe

The first blood count was done on Nov 10th four days after admission red cells 2,976 000 per c.mm ; hæmoglobin, 51 per cent ; colour index, 0 9 white cells 145 000 per c.mm (polymorphs 40 per cent lymphocytes 53 per cent monocytes 6 per cent) Anisocytosis, poikilocytosis and polychromasia were present A second blood count on the following day showed a leucocytosis of 145,000 per c mm of which only 29 per cent were polymorphs 52 per cent were lymphocytes and 12 per cent of doubtful cells were present In view of these findings lymphatic leukæmia was strongly suspected though it was recognised that the mature appearance of the lymphocytes was much against this diagnosis

On the seventh day in hospital the patient's temperature began to fall and reached normal 30 hours later The respiration rate fell more gradually The general condition improved up to a point but he still remained pale and lethargic The signs in the right lung persisted for a considerable time On Nov 16th the leucocyte count was 140 800 per c mm (polymorphs 40 per cent lymphocytes 56 per cent) On Nov 25th it had fallen to 36 300 the proportion of lymphocytes then being 70 per cent This fall continued steadily and by the beginning of January 1937 the leucocyte count was 11 000 per c mm. On Dec 20th the child was heard to whoop for the first time It was the typical whoop of whooping-cough and continued for many weeks—throughout January and the early part of February Other cases of whooping-cough appeared in the ward on Dec 13th 18th (two) and 26th From January onwards the leucocyte count remained at normal levels The last one before discharge (March 16th) was 11 200 per c mm 71 per cent being lymphocytes. There was still a slight anæmia

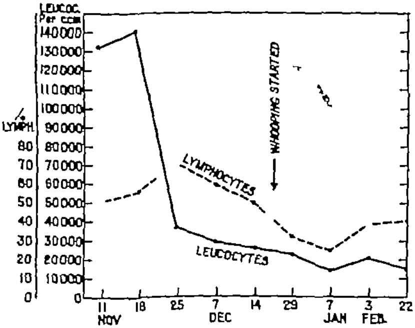

Chart showing white cell counts during the illness

DISCUSSION

Since Fröhlich in 1897 first observed that the leucocyte count in whooping cough was raised this investigation has become a useful aid to diagnosis Churchill (1906) stated that leucocytosis occurred in 85 per cent. of cases and it was present in every one of the 65 cases of Begg and Coveney (1935)

Some difference of opinion exists about the phase of the infection during which this change occurs Sauer and Hambrecht (1931) stated that it was greatest at the height of the paroxysmal stage at the beginning and end of the infection there was often a leucopenia Churchill (1906) and Whitby and Britton (1935) think that the leucocytosis starts in the catarrhal stage There is however general agreement that the count falls rapidly to normal soon after whooping commences In the present case the leucocytosis appears to have started in the catarrhal stage to have lasted though to a lesser degree, during the paroxysmal stage and to have subsided soon after the commencement of whooping

Besides the absolute leucocytosis there is often though not always a relative lymphocytosis which may reach a level of 60 to 70 per cent. This rise though considerable is not so striking as at first it appears to be since in children the lymphocyte level is higher than in adults Up to about the age of 4 the lymphocytes exceed the polymorphs in number and the adult proportions are not reached until the age of 12 It will be seen from the accompanying Chart that in this child there was an initial rise to 50–70 per cent followed by a gradual fall to 30–40 per cent which represents the average level for this age

Counts of 20 000 to 30 000 per c mm are common occasionally one over 50 000 is seen Very high counts are exceptional and only a few examples are on record of any exceeding 100 000 per c mm Cabot (1913) quotes a case of whooping cough complicated by pneumonia in which there were 94 000 leucocytes per c.mm ; 74 per cent were lymphocytes. Bourne and Scott (1922) reported a case in which the count reached a level of 176 000 per c mm 60 per cent. being lymphocytes This leucocytosis occurred in the paroxysmal stage and fell to 50 000 in ten days

It is an interesting fact that in this case as well as in the two others quoted broncho pneumonia was associated with the extreme degree of leucocytosis This complication may have contributed at the most 20 to 30 000 leucocytes per c.mm. to the total count though in point of fact the count remained at the same high level for several days after the temperature had fallen to normal. If the presence of the pneumonia had been reflected in the blood count one would have expected an increase in the proportion of polymorphs during the acute phase. This did not occur

Because of the high leucocyte count and the relative lymphocytosis, lymphatic leukæmia had to be considered as a possible diagnosis. In lymphatic leukæmia in children striking variations of the leucocyte count are met with both from case to case and also in the individual patient In all but the very exceptional case however the lymphocytes are immature in type and this feature of the blood picture is therefore much more valuable diagnostically than either the proportion of lymphocytes or the level of the leucocyte count In this patient the lymphocytes were mature.

SUMMARY

1 A case of whooping cough is described with a very high leucocyte count and a relative increase in the lymphocytes Unlike those in lymphatic leukæmia these were mature in form

2 Such high counts are extremely rare and seem to be associated with a complicating broncho pneumonia. In the present case there is little evidence that it has influenced the blood picture

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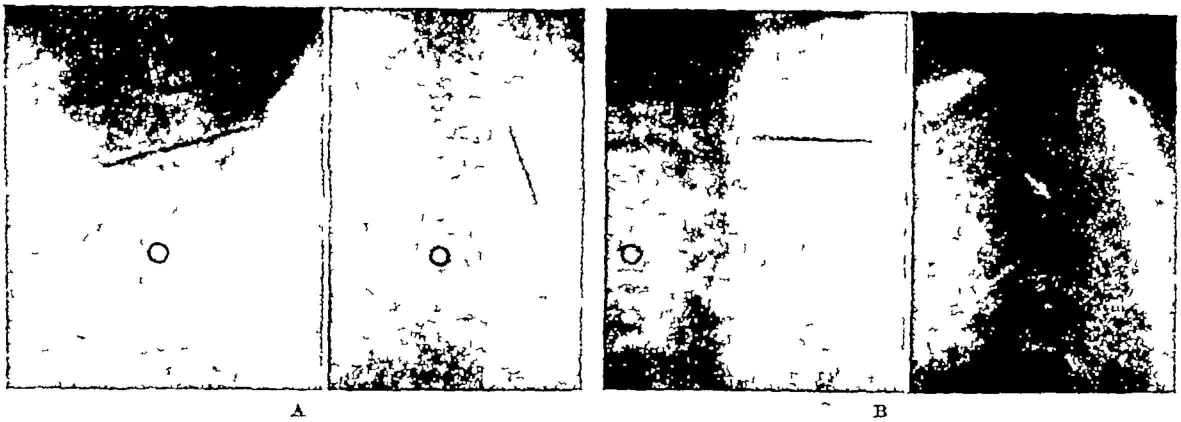
CLINICAL AND LABORATORY NOTES

A NEEDLE IN THE POSTERIOR PHARYNGEAL WALL

By J M Greenwood, M D Manch , D P H
DEPUTY MEDICAL SUPERINTENDENT OF THE WITHINGTON HOSPITAL WEST DIDSBURY MANCHESTER

A WOMAN, aged 63, was admitted to Withington Hospital on Jan 8th, 1937, with a note from her doctor stating that on that date she had collapsed in the street The patient had attended our diabetic clinic for some time, and her blood sugar was controlled by diet



Antero posterior and lateral radiograms showing position of needle A on the day after probable date of its entrance B five weeks later before extraction The circles mark the fourth cervical vertebra

On examination she was found to be in poor general condition but no organic lesion was detected and her blood sugar estimation on the following morning was 77 mg per 100 c cm of blood

On Jan 9th she complained of a pricking sensation in her throat and some difficulty in swallowing, but no abnormality was found on clinical examination An X ray examination was performed by Dr W H Hooton, who reported the presence of a needle lying horizontally on a level with the disc between the third and fourth cervical vertebræ A lateral view of the barium filled pharynx showed the needle to be lying in a ridge of soft tissue which projected from the posterior wall into the lumen of the gullet The patient was told of the presence of the needle and asked if she could explain how it got into that position She stated that she had no recollection of ever swallowing a needle but advanced the following hypothesis On the day before admission she had been sitting at home by herself sewing when her niece rushed into the house saying that a near relative had died suddenly The patient fainted and the niece rushed from the house in a fright to call assistance It was thought that she might have had the needle in her mouth at that time and that the needle was thrown to the back of her mouth when she fainted and fell to the floor

A few days later her symptoms disappeared, and Mr Neville Young, the consultant laryngologist did not advise immediate operation The patient was discharged from hospital on Jan 29th and instructed to report at once if she had any further discomfort

She reported on Feb 15th for a routine blood sugar estimation and drew my attention to a lump on the left side of her neck, asking if it 'was anything" A raised red indurated area was found but without any sign of suppuration and in view of the previous history it was considered possible that the needle had worked its way to the surface The needle could not be palpated on gentle examination but an X ray showed it to be lying transversely with the point just below the skin A sharp pressure on the skin brought the point to view, but a small incision was necessary to enable it to be drawn through the thickened and fibrous subcutaneous tissue The needle was of the ordinary round bodied sewing pattern and measured 1¼ in in length

The case appears to be of interest in that the patient was not aware she had swallowed the needle, and that symptoms did not develop until, presumably, two days after the event On its way to the surface the needle would pass in close proximity to the great vessels of the neck, without apparent injury

My thanks are due to Dr Mercier Gamble, medical superintendent of the hospital, for permission to publish this case

PALPABLE EPITROCHLEAR GLANDS

THEIR VALUE AS A PHYSICAL SIGN

By Griffith Evans, D M Oxon , F R C S Eng ,
D O M S
FORMERLY HON SURGEON TO THE CARNARVON AND ANGLESEY INFIRMARY

Two major advances in syphilology await application to general medicine—namely, the discovery of the spore stage in the life-cycle of the spirochæte and of the lymphophilic character of the virus in the latent period

The active spirochætal stage is well known and is usually diagnosed by pathognomonic signs or by serum tests There is general reluctance to diagnose the disease in the absence of positive serum tests, but syphilologists have repeatedly shown that the Wassermann test is more often negative than positive in the latent period and that a negative reaction is the rule in adults born with syphilitic infection Harrison (1931) has collected 6829 cases, of which the Wassermann reaction was positive in 45 6 per cent , and at the Copenhagen Conference of Pathologists in 1928 where the W R was compared with the Kahn and other precipitation tests, the W R was positive in only 208 out of 496 cases of syphilis

How then are we to diagnose latent syphilis in the absence of a positive W R ? The main foundations of diagnosis must be personal and family history and argument from the morbid anatomy The latent stage begins in both acquired and congenital disease when the spirochæte is swept up into the lymphatic system The main paravertebral chain of glands receives the major part of the infecting organism and the disease is only truly latent when there is no inflammatory response Frequently however an ebb and flow of chronic lymphatic infiltration from these glands affects neighbouring structures this has been recognised as the fundamental cause of aortitis and aneurysm I have endeavoured to show in my book, Latent Syphilis and the Autonomic System that immediate anatomical relations other than the aorta are similarly affected. But if the W R is negative how can we recognise the true nature of these disorders ? There are a number of minor signs among them palpable epitrochlear glands which though not pathognomonic should direct the physician's mind to latent syphilis In the absence of focal sepsis bilateral palpable glands indicate a general lymphadenitis, and in my experience the cause in one-half is syphilis and in the remainder chronic microbic infection of uncertain nature expressed clinically or accompanied by such various states as arthritis, chronic peptic ulcer diabetes or valvular disease of the heart. The text book causes—lymphatic leukæmia Hodgkin's disease &c—are rarities in everyday practice In five years I have met with 100 instances of enlarged epitrochlear glands and have compared them with 100 consecutive patients of all sorts and with 100 consecutive cases of latent syphilis Briefly the results are as follows

1 Of 100 cases with enlarged epitrochlear glands 50 were syphilitic

2 Of 100 consecutive cases of latent syphilis 25 had palpable epitrochlear glands

3 Of 100 consecutive cases of all sorts 10 had enlarged epitrochlear glands and of these 5 were syphilitic.

It is not possible to compare this sign with the Wassermann test for whereas the W R is positive in approximately 50 per cent of latent syphilitics its presence always indicates the disease Enlarged epitrochlear glands on the other hand, are found in 25 per cent of these cases and of those who have the sign only one-half are syphilitic.

As a physical sign therefore enlargement of epitrochlear glands ranks with unequal reacting pupils, atrophic glossitis tender aorta, and certain allergic phenomena It is not pathognomonic but it calls for direct exclusion of chronic syphilis by a method which relies more on history and argument from pathology than on any laboratory test

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BRITISH MEDICAL ASSOCIATION

MEETING IN BELFAST

PROCEEDINGS OF THE REPRESENTATIVE BODY

(Concluded from p 196)

Hospitals Policy

THE B.M.A. council had considered the report of the Voluntary Hospitals Commission which Dr PETER MACDONALD (chairman of the hospitals committee) said was concerned chiefly with the coöperation and coördination of the existing system The Commission recommended the division of the country into hospital regions and the grading of hospitals into central district and cottage hospitals There was a valuable suggestion promoting earlier discharge and relieving the waiting list by setting up auxiliary hospitals to play the rôle of improved convalescent homes. The Commission had endorsed the policy of the association that out patient departments should be for consultation and emergency no general treatment being given there An exception it was suggested should be made for the dependants of lower wage-earners who did not join the public medical service but this proposal was based on the prejudice against poor law medical service which would cease when domiciliary attendance was brought into effect. The policy of providing pay beds for all classes of the community was adopted and the principle of payment of the visiting medical staff with certain reservations, was approved In its evidence before the Commission the B M.A had emphasised the need for hospital beds to which general practitioners should have access for the treatment of their own patients but no notice it seems had been taken of this plea. The Commission had stated that nursing hours were too long that 48 hours a week was the ideal but that at the moment this was unattainable What makes it unattainable Dr Macdonald said is saying and thinking that it is unattainable Hospitals have no more right to exist on the charity of nurses than on the charity of doctors Local authorities in general were niggardly in their attitude to hospitals and it would be in their own interest, as well as their duty to be more generous, for if the voluntary system collapsed a heavy burden would be thrown on the authorities This might have been more explicitly indicated in the report which as a whole, went far to solve the problem of the voluntary hospital.

Dr C E S FLEMMING (Bradford-on Avon) urged members of the medical profession to be prepared for the changes that would take place under the system of hospital regions, and to ensure that they were properly represented on the regional councils.

Private or Public Practice

The recently published report of the Departmental Committee on Scottish Health Services has been considered by the B M A. council which finds in it a thorough and authoritative endorsement of its own health policy Dr J B MILLER (chairman of the health services committee) reminded the meeting that the health services had developed in a haphazard way according to the needs of the times at which their numerous parts had been evolved, and the first essential was to integrate these services into a national health policy comprehensive enough to cover the whole field of morbidity Every member of the community should have available the services of a general practitioner At present many had not this facility and local authorities were trying to repair the omission by the promotion of whole time services a tendency which would gather force unless a definite national policy was framed.

Dr HOWARD STRATFORD (Kensington) wanted the council to stress the importance of the general practitioner's part in the health services In view of the forthcoming propaganda campaign for health education the Ministry of Health should be asked to star the general practitioner He suggested such slogans as Have you a family doctor ? If not get one," and "Consult your family doctor" Dr H A Nathan (Kensington) said the need for propaganda was becoming more and more recognised, but it must be well balanced and show a proper perspective on all the health services There should be explanatory posters in doctors' waiting rooms showing patients how to get the services —Dr H Rose (Wendover) thought there was too much propaganda already and people were being taught to become introspective —Dr E R C Walker (Aberdeen) said that medical service must develop either on public health or on general practitioner and health insurance lines He was convinced that the latter was the right course, but the profession itself must be persuaded of that fact The future medical service should be based on the family doctor, but it was not clear whether or not this was the policy of the Ministry of Health

Feeling His Feet

Newcastle (Dr T Craig) thought that after passing the qualifying examination all doctors should spend six months as assistants in an approved practice or dispensary before being registered to practise Too many were entering the public health service without experience of the practical troubles and trials of general practice, and the younger generation of practitioners were missing something which could never be got otherwise than as assistant in general practice —Dr J H Thompson (Croydon) said that an ever-increasing number of young men, and many of them the best students, were devoting themselves to the academic rather than the clinical side of medicine It would be hard on them to be asked to spend six months in general practice or dispensary work before being registered to practise The system would make it possible for an unscrupulous doctor to take these young assistants one after another and work them like slaves —Dr E R C Walker said that after passing the qualifying examination with fair success one was not completely a doctor, and he did not think that fitting on six months in a practice or dispensary would meet the difficulty A better plan, he suggested, would be not to allow a doctor to practise unsupported and with sole responsibility until he had been working two or more years as assistant or partner It was impossible to learn general practice in six months

Sir Kaye Le Fleming said they were all in sympathy with the desire to help the almost qualified doctor to obtain experience, and the association had brought before the General Medical Council its policy that, without lengthening the curriculum, six months at the end of the 4½ years' course of medical training should be devoted to special responsibility Various methods of achieving this were set out in a memorandum—residence in hospital, apprenticeship to a competent practitioner, and so on The G M C had, however, considered the proposal impracticable, and had not included it in the new curriculum —Dr Craig withdrew his motion

Instruction in Medical Ethic

Dr S Wand (for Birmingham Central) moved that universities should be asked to arrange for the instruction of medical students in their final year on professional customs and obligations —Dr D'Ewart said that such lectures had been given in Manchester for six years, with great acceptance —Dr Waterfield thought that many questions referred to his committee for advice might well be dealt with in such lectures —Sir Kaye Le Fleming said there had recently been a great advance in education of students in this way, similar instruction having been arranged by the organisation committee —Dr Wand hoped that lectures on insurance practice would not be mixed up with those on professional customs —The motion was accepted

Oculists and Opticians

Mr Bishop Harman (chairman of the ophthalmic committee), reporting on the National Eye Service, said that the cases dealt with in 1936 showed an increase of 23 per cent over the previous year—an indication, he thought, of the success of educational propaganda Some excellent posters had been widely applied for and films illustrating the need for skilled examination of the eyes had been in circulation

Last autumn, said Mr Harman, proposals had been made by the Ministry of Health to establish a register of opticians in connexion with ophthalmic benefit, and to supply a scale of charges for the supply of optical appliances The association had taken a strong deputation to the Minister in November as a result of which the amending regulations (still only in draft) gave no official recognition to sight testing by an optician, in spite of opposition on the part of the opticians and pressure in Parliament The public had been taught to have their eyes examined by qualified medical practitioners The eye, as Mr Harman put it, was not like a lens or opera glass, it was part of the living body, and the only person fit to examine it was one specially trained in knowledge of the living organism Pressure should be brought to bear on the public through the People's League of Health, the National Committee on Blindness, and the public health service

Mr H Caiger (Sheffield) divided sight testing opticians into three classes The first was A1—a group who desired to work in coöperation with the medical profession and who did not profess to be equal in efficiency with the qualified practitioner Some of these opticians went out of their way to persuade their customers to consult a medical practitioner when they felt it was necessary (one of them had lent a patient £1 to pay Mr Caiger's fee) The second class were highly qualified in the knowledge of glass, and their very qualification constituted their danger They would assert that they were as well qualified to test refraction and to say whether there was anything wrong with a patient's eyes as a doctor With the aid of resounding titles they persuaded the uninitiated that they held official qualifications equal to a medical degree Some even claimed to be able to diagnose glaucoma The third (and worst) class were out to exploit customers for their own profit —Dr Bertram Smith (Nottingham) said that in many cases if an examination by an ophthalmic surgeon was required a special reason must be stated by the doctor It had been said that if a doctor told his patient that his eyes required examination, the examination would automatically be made by an ophthalmic surgeon, but this was not by any means always the case, and Dr G F P Gibbons (Northants) asserted that, even when a doctor recommended a patient to have his eyes tested, this was apt only to be carried out if the optician concurred

Mr Harman suggested that, apart from certification for ophthalmic benefit, it was in the interest of those who needed to have their eyes examined that it should be done by a qualified ophthalmic surgeon

Dr C M Stevenson (Cambridge) spoke of the value of an ophthalmic collective advertising campaign for which he would gladly surrender the floating 6*d* of the 10*s* 6*d* fee, and in this there was general agreement

On the question whether the association should or should not be represented on the ophthalmic benefit committee Mr **Harman** said that if the Ministry invited them to send someone to observe the proceedings they would accept in that capacity only

Fees for Life Assurance

Dr D A M **Adams** (Lanark) asked that the minimum fee for medical examination and report for life assurance should be 10*s* 6*d* This was he said a question of a sliding scale Insurance societies often worked on a basis of a fee of £1 1*s* for an examination for a £100 policy and 10*s* 6*d* for a smaller policy In some cases a large amount of work was put in and a fee of 5*s* 2*d* would be received —Hampstead moved that the minimum should be £1 1*s* —Dr A B **Murray** (Banff) said the examination was the same whether the policy was for £1000 or for a much lower sum and Dr **Howie Wood** (Isle of Wight) said it had been agreed last year that 10*s* 6*d* should only be accepted if the form to be filled up was shortened and simplified —Dr J W **Bone** said the policy of the association set out in 1920 was working satisfactorily It had made a sort of bargain in connexion with three kinds of insurance

> (1) A medical examination for industrial insurance with two fees—5*s* for a simple and 10*s* 6*d* for a more elaborate form the first was quite a simple examination and did not include testing the urine or taking the blood pressure (2) an examination carrying a fee of 10*s* 6d for life insurance policies up to £100 and £1 1*s* for larger policies (3) an intermediate form longer and more careful than that for industrial insurance the fee to be £1 1*s*

If an attempt was made to get rid of the 5s fee the result would be that insurance would be carried on without any medical examination at all. He urged the meeting not to press for a minimum of either a guinea or half a guinea It would not please the rank and file, and was not a practicable proposition — The Hampstead amendment was lost

Dr **Nathan** said that an examination ought to *be* an examination and should include such matters as examination of urine and blood pressure If doctors were content to stick to a fee of 5*s* they would never get more, and Dr **Murray** felt strongly that the higher fee should be pressed for —On being put to the vote the Lanark motion was approved by 61 to 59 but on a division it was lost by 94 to 72 votes

Psychology of War

Dr J **Nunan** (Sheffield) moved the appointment of a committee to consider the psychological causes of war and to press for an international section under the health organisation of the League of Nations to deal with the subject War he said was barbarous futile and disastrous to victor and vanquished alike All organisations existing for the benefit of humanity should exercise their influence against war and the medical profession should take the lead by reason of its great authority and prestige —Mr **Caiger** described war as the criminal insanity of humanity If our profession he said has to do with mental disorder and if psychology comes within the province of our profession then we have to deal with the psychology of war The Netherlands medical association which had been working on the subject for six years had appealed to the B M A to give the support of their wider influence —Dr A T **Jones** (Glamorgan) remarked how widely different mass psychology was from individual psychology surely it was the business of the medical profession to lead and direct thought in this matter

Mr **Harman** was persuaded that whatever action was taken must be international and on his proposal it was decided by a large majority not to set up a committee of the association but to press the need for action on the League of Nations.

Aliens on the Medical Register

Dr **Ernest Ward** (for Torquay) asked how many new members enrolled during the past five years were non nationals of the refugee type and what further action had been taken since the 1936 meeting to limit their admission to the Medical Register

Dr J C **Mathews** (chairman of the organisation committee) replied that between 1931 and 1936 138 non nationals had been enrolled being 1 5 per cent of new applications From October 1936 to June 1937 there were 26 (or 1·6 per cent) No permits had been issued by the Home Office during the past twelvemonth and it was clear that these 26 had received their official permits at an earlier date

Topics in Brief

Certain resolutions which led to but little discussion were of interest in themselves A motion by Torquay that medical practitioners should not consult other than medically qualified radiologists was held to be outside any formal ruling The opinion was expressed however that while a registered radiographer might suitably be employed to take X ray photographs, these should only be interpreted by a medical practitioner and the matter was referred to the ethical committee

Dr **Waterfield** (*chairman of this committee*) raised the question whether the practice of putting surgery hours and other information on medicine bottles was desirable. It was now compulsory in insurance practice for the doctor's name to appear on bottles containing poison but the meeting did not like the idea of adding his consulting hours and such like

Dr **Henry Robinson** (chairman of the charities committee) said there had been a slight falling off in the amounts collected and distributed through the charities trust fund during 1936 Members of the profession did not support medical charities as well as they ought and he pleaded with doctors to remember them when making their wills He had made investigations from which it appeared that if every member of the profession able to provide amply for his dependants were to leave half of one per cent of his estate to medical charities the difficulties of those charities would largely disappear —The Rev S D **Bhaba** M D the Syrian orthodox patriarch of Antioch who has been a member of the association for 56 years said that if all the members saved one cigarette every day they could raise £30 000 a year for medical charities

As his last word from the chair Mr **Souttar** expressed the indebtedness of the body to Mr H Cooper who had reported its proceedings for more than 30 years

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ANNUAL DINNER

The King s Hall at Balmoral was transformed on the evening of July 20th into a gigantic banqueting room with a specially laid dancing floor It was in the words of the local press the largest dinner ever held in Ireland Prof R J Johnstone presided. The Duke of Abercorn Governor of Northern Ireland replying to the toast of his health assured his medical guests that it had already acted In the absence of the Prime Minister who was taking a short rest on medical advice before the Royal visit, Mr J M Andrews, Minister of Finance, proposed the toast of The British Medical Association, mentioning the great boon to Northern Ireland of the medical benefit scheme Sir Kaye Le Fleming, in responding, admitted that the health of the Association had never been better than at that moment He went on to deprecate the tendency of drawing the health services into the political arena before they had been well matured in the medical mind, and in view of the proposed fortnight's holiday for the whole industrial population he offered the help of the medical profession in the problem, scientific and psychological, of the enjoyment of leisure Sir Kaye then toasted The City of Belfast and Queen's University, to which the Lord Mayor, Sir Crawford McCullagh, responded on behalf of the city, and Lord Londonderry on behalf of the university The latter recalled the late Sir William Whitla's presidency on the occasion of the B M A 's last visit and found the highest tribute to medicine in the growing prosperity of the insurance companies which, owing to the increased expectation of life, were now paying bigger dividends and better bonuses Prof C G Lowry proposed The Guests, welcoming delegates from all parts of the Empire whom he described as ambassadors of peace Sir Charles Blackburn, representing New South Wales, and Dr Morris Fishbein, delegated by the American Medical Association, responded to the toast In the final toast of The President, Prof P T Crymble included Mrs Johnstone and the versatile secretaries of the local committee, Dr F M. B Allen and Dr R W M Strain Prof. Johnstone in replying was received with the Queen's war cry

THE GRADUATION CEREMONY

In the great hall of Queen's University on July 22nd, Lord Londonderry, as Chancellor, conferred the honorary degree of doctor of laws upon Dr Anderson, Sir Farquhar Buzzard, Dr Morley Fletcher, and Prof Hey Groves, and the honorary degree of doctor of science upon Prof Bedson and Dr Felix The distinguished visitors were presented to him by the deans of the respective faculties in brief speeches that may be summarised as follows —

DR G C ANDERSON

Dr Anderson has held the important post of medical secretary to the British Medical Association since 1932 He has brought to the consideration of the questions which concern the association a clear and balanced mind, in sympathy with the difficulties of a general practitioner which he had himself experienced for more than ten years but determined that medicine should be so organised as to function with the greatest possible efficiency in advancing and maintaining the health of the community In addition to his contributions on the structure of medical services, he has published articles on the problems of hospital policy and medical practice, nor may I omit a reference to the part he played in the erection of the splendid buildings in Tavistock-square

SIR FARQUHAR BUZZARD

The medical profession and the general public have long held in great respect the many services to medical education and to medical scholarship particularly neurology of the distinguished past president of the B M A His record as a student was an unbroken series of distinctions, and he is as vigorous in body as in mind, obtaining a Soccer Blue at Oxford, and playing for the Old Carthusians while at St Thomas's, during which time they twice won the Amateur Cup Oxford has been able to recognise by name two aspects of his career, for while the University caused him to be appointed regius professor of medicine Christ Church has made him one of its students But it is as an administrator that he has lately won distinction as a member of the hebdomadal council More recently he has been one of that body of men gifted with esoteric abilities which control the powers of Moses and Midas and by their touch have produced a stream of gold which is a source both of envy and of sincere congratulation

DR H MORLEY FLETCHER

Dr Fletcher commenced his medical studies at Trinity College, Cambridge, St Bart 's, Freiburg, and Vienna As might be expected from one who listened so intelligently to so many different orthodoxies he has one of the most acutely critical minds in medicine One of his earlier publications was " On the *so-called* periarteritis nodosa " His detection of error is exercised not only on scientific hypotheses but also on conjectures contained in certain monographs whose utility is most doubted by their authors There are few medical men who have not been examined by Dr Fletcher, he is examiner in medicine to Queen's, National, Durham, Cambridge, Manchester Sheffield, the Conjoint, and the Society of Apothecaries One half of the students who fail in their examinations ascribe their lack of success to the perverse blindness of examiners, Dr Fletcher continues in his offices because he combines with intellectual intrepidity great moral bravery, or perhaps he relies on that half of the students who pass their examinations and rightly ascribe their success to the kindness of examiners As a student of comparative orthodoxy Dr Fletcher no doubt regards a howler as a heresy—part of the science of the future But I must not place a false emphasis on one part only of Dr Fletcher's activities, as the medical profession well know, he is a most distinguished physician, and by his writings has done much to advance the science of medicine

PROF E W HEY GROVES

Prof Groves has been eminent both as a surgeon in uniting fractures of the body natural and as an administrator in preventing fractures of the body politic His main work has been done in his natal city of Bristol, of whose hospital he is senior surgeon, and of whose university he is emeritus professor of surgery But his work for orthopædics has won for him universal renown, and the subject has been greatly enriched by his writings The general literature of surgery owes much to his labours as editor of the *British Journal of Surgery* The esteem in which he is held by his colleagues is evidenced by his election in 1928 to be vice president of the Royal College of Surgeons of England, and in 1929 president of the Association of Surgeons of Great Britain and Ireland

PROF S P BEDSON, F R S

Prof Bedson obtained the degree of bachelor of medicine, with honours, at Durham in 1912, and from 1913 to 1914 was a B M.A research scholar at the Lister Institute During the war he served for two years as a combatant officer, but, after being wounded at Gallipoli, he was transferred to the R A M.C, becoming assistant adviser in pathology to the Fifth Army in 1918 After two years at Newcastle he returned to the Lister Institute in 1921, and in 1924 was seconded for duty under Arkwright in the work of the Foot and Mouth Disease Research Commission His chief work in bacteriology has been his studies of elementary bodies in virus diseases, studies in which he showed that filtrable viruses react with antibodies in the same way as do ordinary bacteria These investigations culminated in his discovery and proof that psittacosis is due to a virus In 1926 Dr Bedson went to the London Hospital as senior Freedom research fellow, and in 1934 he was appointed to its chair of bacteriology

ARTHUR FELIX, D SC

Dr Felix graduated in science at Vienna in 1910, and on the outbreak of war in 1914 was appointed a bacteriologist to the Austrian Army During the war, his work with Weil on the serology of typhus gained for him a world wide reputation With the creation of *Palestine as a Mandated Territory, Dr Felix* became the chief bacteriologist to the Jewish Hospitals Organization in that country In 1927 his brilliant work brought him to the Lister Institute, and during the past ten years he has enhanced his reputation especially by his work on antigenic analysis His discovery of the Vi antigen of the typhoid bacillus has been a most important advance both in the domain of preventive and curative medicine It is a privilege to have on our roll the name of Arthur Felix a former Austrian now a British subject whose labours have been for the benefit of no one single nation but for that of humanity at large

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SECTIONS OF MEDICINE AND OF PATHOLOGY, BACTERIOLOGY AND IMMUNOLOGY

AT a combined meeting of these two sections Sir THOMAS HOUSTON (Belfast) presided.

Prof L J WITT (London) opening a discussion on

The Hæmorrhagic States

said that such a complex and interlocking mechanism as was manifest in these states involving plasma platelets endothelial lining of the vessels and connective tissue, was inevitably confusing He was impressed by the frequency and diversity of hereditary hæmorrhagic diseases and by their resistance to treatment but thought personally that they were not subject to immutable laws in pattern or in pedigree. The local application of coagulant snake venoms (Macfarlane and Barnett 1934) he considered the only new treatment whose value had been confirmed—liver and œstrin had proved valueless He and Dr Macfarlane had had no success in treating 4 patients suffering from hæmophilia with *egg albumin* preparations as advised by the Sheffield workers (Timperley Naish and Clark 1936) Moccasin snake venom had also proved to be unsatisfactory in his experience in hereditary thrombasthenia and hereditary telangiectasia while Davidson had found it valueless in idiopathic thrombocytopenic purpura. Prof Witts said that the latter condition is now well differentiated from other types of purpura. The spleen shows no gross changes though there may be megakaryocyte proliferation in the marrow It is unknown whether the disease is due to a diminished production or excessive destruction of platelets. The immediate dramatic results of splenectomy he believed to be misleading since half the patients subsequently relapsed suggesting that removal of the spleen does not affect the fundamental disease process He did not think that this relapse was necessarily due to the development of a splenunculus In acute cases medical treatment notably transfusions, should be tried before resorting to operation In severe chronic cases greatly incapacitated splenectomy should be advised The isolation of vitamin C Prof Witts characterised as an outstanding event This vitamin he regarded as a specific cure for scurvy but as valueless in other hæmorrhagic conditions The mere association of absence of vitamin C in the urine with bruising or bleeding should not necessarily be considered diagnostic of scurvy In illustration of this point he described a patient with bruising of the shoulder and diminished vitamin-C excretion who had been shown at autopsy to have peri arteritis nodosa. The impact of biochemistry on the hæmorrhagic states was he thought becoming increasingly important and he instanced Szent Györgyi's discovery of vitamin P the permeability controlling vitamin the hæmorrhagic chick disease due to vitamin K deficiency and the possible effects of vitamin T in thrombocytopenic purpura

Dr N B CAPON (Liverpool) discussing the hæmorrhagic disease of the new born said he had found it to have an incidence of 1 in 400 births. He had had 68 cases under his care, 58 of which had recovered The ætiology was still obscure apparently sex weight at birth labour and antenatal conditions did not influence the incidence Melæna had been the predominant symptom in his series sometimes associated with hæmatemesis multiple hæmorrhages had occurred rarely The age of onset he had found to be with rare exceptions between 30 and 50 hours Post mortem changes were rare with the exception of occasional slight intestinal erosion or ulceration. He gave blood by intramuscular injection to mild cases and by the intravenous route to more severe cases It was important to exclude the mother's nipple as a source of the blood before concluding that it came from the child's intestine.

Dr JANET VAUGHAN (London) subjected the lines of therapy advocated in idiopathic thrombocytopenic purpura to critical review The available evidence suggested that both vitamin C and vitamin P were of no value Vitamin T still remained to be further investigated Hormone therapy also in her view had little to support it though thyrotropic hormone ovarian preparations liver extract and parathormone had all been advised. The evidence in favour of moccasin snake venom when analysed was not impressive On the other hand the conflicting reports concerning the value of X ray therapy might point to the existence of two types of case one responsive to X rays and one resistant Splenectomy was the treatment of choice most results in chronic cases seemed to be good—operative mortality being about 7 per cent The relapses described by Prof Witts might be due to the development of a splenunculus

Dr S C DYKE (Wolverhampton) discussed the importance of laboratory investigations in cases of the hæmorrhagic diathesis In taking blood for a routine count it was essential to note the bleeding time. This was never prolonged in hæmophilia. In examining stained films he found it possible to assess the number of platelets to some extent Bone marrow puncture he regarded as a negative indication to a diagnosis of hæmorrhagic disease In acute idiopathic thrombocytopenic purpura he had never found the platelet count above 50 000 per c mm while in anaphylactoid purpuras the platelets were never in his experience below 60 000 the normal limits being 150 000 to 450 000 per c mm. He held estimations of vitamin C excretion to be a desirable investigation but doubted whether the accepted standard of Harris and Ray was correct He had found all hospital patients in a condition of subclinical scurvy by this standard which he did not believe to be true. For the estimation of coagulation time he preferred the method of Lee and White to that of Dale and Laidlaw

Dr R G MACFARLANE (London) examined the mechanism of hæmorrhage and hæmostasis He described experiments made on capillary vessels in the nail bed and on the effect of anticoagulant dyes on the bleeding time of rabbits. He concluded that hæmorrhage from small vessels is normally checked by their contraction which persists for 2–3 hours during which period the blood, that has escaped initially clots and becomes adherent In his view the period of vascular contraction is followed by one of dilatation but the firmly attached clot prevents the occurrence of hæmorrhage He suggested therefore that continued hæmorrhage may be either primary due to an initial failure of the vessels to contract as in hereditary telangiectasia or secondary due to ineffective clot formation as in hæmophilia The thrombocytopenic purpuras come into both in the habit of ligaturing it with the aid of an aneurysm needle He believed in the efficacy of calcium therapy in reducing the œdema which was a marked feature of ulcers and which was in part responsible for the slowness of their healing

The President drew attention to some of the anatomical features not always appreciated in the performance of gastrectomy the lesser sac did not extend to the right of the middle line, there might be no communication behind the stomach between the upper and lower parts of the lesser sac, contrary to text-book illustrations, the lesser omentum was completely avascular, the left gastric artery did not need preliminary ligature before the stomach was cut

Mr G GORDON TAYLOR (London) said that his figures for post-gastrectomy anæmia agreed with those of Dr Carl Semb A severe crippling anæmia in young women was a common feature of the results recorded at the Middlesex Hospital He was strongly in favour of early operation—within 24–48 hours—in those cases of hæmatemesis which required surgical intervention

Mr H W RODGERS (London) said that the Scandinavian diathesis was one that tended to be associated with a less highly developed gastric mucosa The mucosa was also not so well developed in women as in men He advanced these facts in explanation of the difference in the figures for post-operative anæmia in different countries and in the two sexes

The Gastroscope in Dyspepsia

Mr H W RODGERS read a paper on the Use of the Gastroscope in Cases of Dyspepsia with Normal X Ray Findings Gastroscopy, he said, was useful in diagnosis, both of diffuse conditions, such as gastritis, and of localised conditions, such as an ulcer in which the radiography was inconclusive as regards the existence of the lesion or its possible malignancy The proof that a mucosa was normal might save a patient from treatment which was not only useless, but might be harmful. It was claimed that very early evidence of malignancy could be obtained by a change in colour of the ulcerated patch of mucosa and by the appearance of its edge The value of examining the stoma of gastro enterostomy cases was particularly apparent Gastritis or ulceration could be demonstrated, though a jejunal ulcer tended to get tucked round under the edges of the stoma and out of view of the gastroscope The diagnosis of atrophy of the gastric mucosa was only possible with the use of the gastroscope

Mr H C EDWARDS (London) said that his initial enthusiasm had been a little tempered, but he did still regard the gastroscope as an invaluable instrument, particularly for observation of the healing process in ulcers His opinion was that ulcers did not heal in patients over the age of 45–50 With this opinion Mr Rodgers disagreed.

SECTIONS OF NUTRITION AND OF OBSTETRICS AND GYNÆCOLOGY

AT a joint meeting of these sections a discussion took place on the

Nutritional Needs of Pregnancy

SIR ROBERT McCARRISON (Oxford) said that we should not regard the nutritional needs of pregnancy as being fundamentally different from the nutritional needs of women at other periods of their lives The perfectly nourished woman should take pregnancy in her stride, and the medical profession must devote its energies to the mass production of women who can do so He emphasised the factors which, in his opinion, are necessary for perfect nutrition There must of course be an adequate supply of the necessary food materials, but in addition there must be measures and habits of life favourable to nutritional efficiency, such as appropriate exercise in the open air, suitable clothing, proper breathing, and satisfactory action of the kidneys and bowels Lastly, there must be an avoidance of adverse influences such as insufficient rest, bad ventilation, worry and emotional excitement, infections, and indulgence in alcohol. A perfect dietary was provided by milk and milk products, lightly milled cereals, green leaf and root vegetables, fruits, pulses, eggs, and meat (including fish, fowl, and glandular organs) In this country small doses of cod liver oil and of yeast extracts were wise precautions He criticised certain of the recommendations of the League of Nations Technical Commission in his view an allowance of 68 g of animal protein a day is unnecessarily high, and more emphasis should have been laid upon the use of wholemeal bread, fresh green vegetables, and raw ripe fruit

Dame LOUISE McILROY (London) expressed the opinion that diseases of pregnancy and even the complications of childbirth often owe their origin to dietetic defects that should be classified as deficiency diseases It was strange that only during the last few years had the results of nutritional research, carried out in man and animals, been applied to obstetrical practice Many hospital patients who complained of dyspeptic disturbances, muscular cramps, sleeplessness, backache, and other symptoms during pregnancy could be treated with good results, not by sedatives, but by the administration of minerals such as calcium and iron, and by careful advice on diet Patients should be weighed regularly in antenatal clinics, since a large gain in weight often indicated incipient toxæmia She also emphasised that pregnant women need fresh air and exercise, and recommended a 2 mile walk every day There were practical difficulties in supplying pregnant women of the poorer classes with an adequate diet, and efforts should be made to improve their conditions of life Transport, home storage, agricultural practice, and finally purchasing power were among the national problems to be tackled, but it must not be forgotten that the proper nutrition of the pregnant woman was also a national problem

Dr G C M M'GONIGLE's paper was read in his absence by Dr G A Harrison Dr M'Gonigle emphasised once more the importance of nutrition in pregnancy and lactation There was no evidence that a reduced intake of food ensures a smaller baby and an easier delivery, nor was it certain that it reduces the incidence of pregnancy toxæmias He agreed with Sir Robert McCarrison that pregnancy should not call for any great change in the diet of a previously well nourished woman. In speaking of the dietary requirements of pregnancy, Dr M'Gonigle said that deficiencies in calorie intake could be neglected, but that among the poorer classes the protein intake was often dangerously low He laid stress on the importance of generous supplies of calcium and iron, in his view it is almost impossible to administer an excess of these dietary constituents He spoke also of the advisability of giving supplements of vitamins A, B, D, and E, and referred to his experiments in Stockton on Tees, and those of Lady (Rhys) Williams in other areas, to support his statements He considered an adequate supply of protein to be the greatest single requirement during lactation A nursing woman should be given 24 g of good quality protein for every pint of milk produced and this should be additional to the protein taken for the woman s own bodily requirements. While the supply of vitamins and minerals to pregnant women in tabloid form might be pharmacologically a correct procedure such a measure should not be necessary Suitably selected and prepared food should suffice for their needs

Dr LUCY WILLS (London) dealt with calcium and phosphorus requirements during pregnancy She quoted the work of Toverud and Toverud who showed from balance experiments that 1·6 g of calcium and of phosphorus per day are necessary to maintain the body in equilibrium during pregnancy and in addition to this the supply of vitamin D or sunlight must of course be adequate In India and China osteomalacia was a very common complication of pregnancy and lactation In North India the disease was apparently caused by a deficiency of calcium while in Bombay a deficiency of phosphorus was more common. Even in this country the calcium intake rarely reaches 1 6 g a day Hence many women must be in negative calcium balance during pregnancy Dr Wills suggested that possibly much of the ill health among expectant mothers was attributable to a mild form of osteomalacia. Cramps for example could often be cured by the administration of calcium

Dr MARGARET BALFOUR (London) spoke on various practical means which had been adopted for securing better nutrition in pregnancy One was the distribution of milk which had the disadvantage that there was no certainty that the mother herself takes the milk it might be given to other members of the family Some authorities had given free meals to pregnant women this was a difficult service to organise and was not popular with the mothers who disliked leaving their families during the dinner hour The third method consisted in giving supplementary foodstuffs. Dr Balfour described a large scale experiment on these lines which had been carried out during the past two years in the distressed areas under the auspices of the National Birthday Trust The maternal death rate had been greatly reduced among women receiving the supplements this result must not be accepted as final but as indicating the need for further research During the present year the scheme had been extended to include more than 10 000 women and it was hoped not only to confirm the previous findings but also to determine which of the various foodstuffs administered was chiefly concerned.

Mr D W CURRIE (Leeds) briefly reviewed the early work on the effect of vitamin E on the reproduction of animals and gave a short account of his own clinical trials of this substance. The vitamin was administered in wheat-germ oil to 37 women who had previously had 121 pregnancies with only 15 living children Following this prophylactic treatment, 36 living children were born to these 37 women (3 women aborted and there were two sets of twins) Some of the patients treated with vitamin E developed albuminuria in the course of their pregnancy

Dr R A MCCANCE (London) described the results of an investigation into the amounts of food actually consumed by pregnant women at different economic levels The study had been carried out by the individual method All food eaten during the period of one week was weighed and the chemical composition of the diets calculated from analyses carried out in Dr McCance s laboratory Twenty three wives of unemployed miners 20 labourer s wives 21 women of the artisan class and 7 of the professional class had been studied. The average intakes of proximate principles calories calcium phosphorus and iron rose with increasing income but even among the artisan class whose incomes were sufficient to buy an adequate diet the intakes of the various constituents were in no case up to the allowances suggested by the League of Nations The average calcium intake was less than half and the calcium intake of the wives of unemployed only about one quarter of the requirement (1·6 g a day) discussed by Dr Lucy Wills

Sir FRANCIS FREMANTLE (Hatfield) agreed with Sir Robert McCarrison that rest and sleep are important factors in well being during pregnancy Rest would tend to promote assimilation of the food ingested. Sir Francis suggested that mothers who are working and walking all day in their homes need more rest not a 2 mile walk.

Dr ERNEST MILLIGAN (Glossop) dealt with the subject from the economic standpoint He had collected budgets from 52 families in his district where the average amount available for food per head per week was *4s 0d* A process of simple arithmetic showed that if the mother is to buy for herself 1 quart of milk a day in order to provide herself with 1·6 g of calcium there will not be much money left over for other commodities. The speaker urged the desirability of supplying cheap milk to mothers and children under 5

Sir MANGALDAS MEHTA (Bombay) followed with some remarks on the nutrition of expectant mothers in Bombay where, he said rickets and osteomalacia are not very common except among purdah women but anæmia is a very important factor in maternal mortality An inquiry was being made at the present time into the diets of poor working-class women whose food consists almost entirely of polished rice eaten with a gravy of spices, condiments and salt

Mr L C RIVETT (London) pointed out that although a perfectly nourished woman should take pregnancy in her stride in actual practice a large number of our expectant mothers have incomes so low that they cannot possibly do so Imbalance among the dietary constituents might be important as well as actual deficiencies

Colonel C H. REINHOLD I M S spoke of the incidence of rickets in the Punjab and other parts of India.

Prof A LEYLAND ROBINSON (Liverpool) suggested that among the poorer classes multiparæ tend to be underfed more often than primiparæ. The nutritional needs of pregnancy provided a very different problem from that of the nutritional needs of non pregnant women. The introduction of the fœtus into the uterus made a profound difference to the mother

Sir ROBERT MCCARRISON in reply said he was quite aware that in practice pounds, shillings and pence are all important but it was the business of research workers to preach the ideal and *nothing less*. At present doctors were the salvagers of wrecks. The future must lie in prevention not cure and our aim must be adequate nutrition from the beginning of antenatal life

Dame LOUISE MCILROY said that she had proved the benefit of exercise in the open air for expectant mothers. Housework could not take its place In contrast to Prof Robinson Dame Louise said she believed that among all but the very poor women tend to over-eat during pregnancy

THE ROYAL SANITARY INSTITUTE

THE annual congress of this institute was held in Birmingham from July 12th to 17th, when Mr OSMOND CATTLIN, the chairman, installed the Earl of DUDLEY as president for the current year In a brief address Lord Dudley spoke of the prevailing enthusiasm for planning in all directions—which was all to the good, he said, if we were certain of the validity of what we were planning

Sir KINGSLEY WOOD, the Minister of Health, addressed the congress at a special meeting Instead of forecasting future legislation he confined himself—somewhat to the relief of the delegates—to Acts already placed on the Statute Book or shortly to find their way there The health of the people, he said, is better to day than it has ever been, but it is costly, for last year loans to local authorities for sewage disposal alone were greater than all the loans for all public health services granted in 1875 The new legislation concerning housing, factories, and maternity services promises immense benefits, but calls for great labour and care from the local authorities and their officers

In the section of preventive medicine Sir ARTHUR MCNALTY chief medical officer of the Ministry, gave an address entitled a Coronation Pageant of the Public Health, reviewing public health legislation in the hundred years between the coronations of Victoria and George VI He spoke of the difficulty of getting the people to accept health rules and laws for their own benefit, why Chadwick failed to obtain all he sought because the people would rather have cholera than be bullied by health regulations, and how modern hygiene is obstructed by young people neglecting rest in a feverish hunt for ill ventilated amusements at night He drew attention to the leading part Britain has taken in the development of hygiene and said that at the beginning of the century we stood far in advance of any other country Since then others have caught us up and increased effort is required on our part to keep in the van

MATERNITY IN HOME OR HOSPITAL

A discussion on the development of the maternity service was opened by Prof J M Munro Kerr, Dr G F Buchan, medical officer of health for Willesden, and Dr C E S Flemming They agreed that institutional midwifery would increase at the expense of deliveries in the women's own homes and also, though for different reasons, that this should be encouraged

Prof MUNRO KERR urged greater employment of obstetric specialists and advocated a scheme in which all deliveries should take place in institutions staffed by competent midwives and obstetricians He suggested that the Ministry of Health should establish a central obstetric board to control the maternity service This called forth some criticism in the discussion, for he had not explained how his proposed central board would stand with the Central Midwives Board Dr BUCHAN agreed generally with Prof Munro Kerr He maintained that the risk of infection was no greater in an institution than it was at home, and expressed the belief that home deliveries would soon become exceptional. Dr FLEMMING differed from the two former speakers in urging that general practitioners—or such of them as wished to practise midwifery—should staff the maternity homes with the assistance of trustworthy midwives and obstetric specialists He pointed out that many situations arise in pregnancy, delivery, and puerperium that were entirely within the province of the family doctor

INCAPACITATING SICKNESS —INDUSTRIAL MEDICINE

The conference of medical officers of health opened with an address by Dr ERNEST WARD, who introduced the subject of incapacitating sickness Dr P L MCKINLAY, of the Department of Health for Scotland, summarised the findings of the Scottish Insurance Commission which publishes annually the only returns available in Great Britain on the incidence and duration of sickness amongst the insured population He referred to the gap between knowledge and practice, and mentioned that in only 500 out of 11,000 cases of incapacitating sickness was a specialist's opinion obtained and in only 500 was help sought from laboratories An increase was evident in certain diseases, especially bronchitis, gastric disorders and, most notably, psychological disturbances There was he said, a rise in incapacitating sickness in young insured persons

Prof R M F PICKEN, of the Welsh National School of Medicine, expressed the hope that the English Insurance Commission would issue annual reports similar to those available from Scotland He drew attention to the meagre sources of information on morbidity in the population, which except for a few diseases, such as rheumatism, was almost negligible Though much was known about the incidence and interference of the minor diseases of school children and infants, of tuberculosis and comparable special forms of sickness, it was only possible to guess at the nature and duration of the more common causes of ill health which incapacitate the workers and at the waste due to them Knowledge of incapacity was lacking, for though it was well known that what incapacitates a person for one kind of work does not incapacitate him for another, and that reaction to sickness varies enormously in different individuals, no statistical information on these points was available to help in forming a policy of the management of sickness in the population

Dr E R C WALKER, speaking as an insurance practitioner, admitted the lack of satisfactory evidence and the necessity for obtaining it, but he pointed out that in the present state of insurance practice it was hardly feasible to obtain more from the practitioners than they give already

Dr HOWARD COLLIER, reader in industrial hygiene in the University of Birmingham, addressing the section of hygiene in industry, spoke of the increasing interest of medicine in industry and the building of a bridge between the science of physiology and the conduct of manufacture He referred to the needs of workers as individuals, as members of a community, and as units in an industry, and of the new conception of medicine to create health by satisfaction of these needs He also mentioned the difficulty of industrial medicine caused by the lag in time between an evil produced by a new process and the appearance of disease in those exposed to it

Mr WALTER BARROW read a paper on the utilisation of medical service in industrial business, using Cadbury's works at Bournville as an example of what can be done to protect workers in large industries where the standard required is high

Dr G P CROWDEN, reader in industrial physiology at the London School of Hygiene, read a paper on the practical application of physiology to hygiene in industry In his introductory remarks he outlined a scheme for the health control of the whole population which would abolish the present confusion between the health activities of the Ministry of

Health and those of the Home Office and the Board of Trade

In the discussion emphasis was laid on the importance of reform coming from employers and employees alike

HEALTH INSURANCE AND PUBLIC SERVICES

In the section of national health insurance Mr **Henry Lesser** chairman of the Consultative Council for Approved Societies Work took a rosy view of the influence of State insurance Mr E M **Stafford** chairman of the Birmingham insurance committee traced the history of insurance from 1911 when in spite of 'ninepence for fourpence the Act met with opposition from all parties, to the present day when insurance is not only accepted but expected to embrace every risk to which we are exposed. He had no new objections to urge but the main theme of his argument was embodied in the following sentence Perhaps the greatest disadvantage—it may almost be described as an evil—of the extensions of social insurance is the removal from the mind of the ordinary man in the street the urge to save Yet he admitted that the manifold advantages of insurance far exceed any evil it has produced one of the chief being improved medical service Mr F T **West** read a paper which was a plea for a healthway code to make people health-conscious He suggested a short book to be sent to every householder each chapter should be written by an expert on the subject and preferably one who has had journalistic experience and is able to put it over

In the conference of sanitary inspectors Mr A W **Turley** chief sanitary inspector of Birmingham spoke on the disinfestation of furniture in which he gave a detailed description of the use of HCN to ensure death to the bugs and their eggs and safety to man He mentioned the use of test papers to decide whether the gas exists in dangerous concentration At the same meeting Mr J H **Codling** general manager of the salvage department, Birmingham read a paper on the composition of house refuse and the utilisation of its components. Birmingham recovers about £20 000 a year from the sale of salvage from house refuse which pays for the labour of salvage and gives something over to reduce the rate needed for collection and disposal of house refuse but he said that in this country at the present time refuse can never pay for itself

The conference of representatives of local authorities had the opportunity of hearing Dr R R **Kuczynski** speak on the future of the population of Great Britain In the section on maternity and child welfare Miss **Lillian de Lissa** pleaded for an extension of nursery schools Dr **Ethel Cassie** of Birmingham gave a qualified support in commending the day nursery as a necessary and useful institution and Dr **Hugh Paul** put forward the case for periodic medical inspection of toddlers

REVIEWS AND NOTICES OF BOOKS

A Textbook of Obstetrics

By **Edward A Schumann** A B M.D F.A.C S Professor of Obstetrics School of Medicine, University of Pennsylvania Surgeon in Chief Kensington Hospital for Women Philadelphia, and Gynæcologist and Obstetrician to Philadelphia General and Memorial Hospital. London W B Saunders Company Pp 780 27*s* 6*d*

In a book of no great length Prof. Schumann has managed to teach and describe his subject in sufficient detail and at the same time to discuss those aspects which cannot be treated dogmatically The first hundred pages provide one of the best descriptions of the anatomy and physiology of the female reproductive organs and of the state of pregnancy that we have read and the illustrations do credit to the text Antenatal supervision receives proper attention and advice is given on several items of practical importance which are too often ignored. The physiology and mechanism of labour is well described and the instructions for its conduct are practical and detailed. The routine use of pentobarbital sodium as a drug to relieve pain in labour cannot, however be approved without reservations The substance has been given a good trial in this country and quite apart from the restlessness it often induces its administration does not appear to be free from danger

In the treatment of important complications of pregnancy such as eclampsia and placenta prævia, no definite line of teaching is followed. Prof. Schumann describes several alternative methods of dealing with the situation and leaves his reader uncertain which he would advise under different circumstances. The chapter on contracted pelvis contains a description of a number of possible deformities and contractions. It is surprising to find some twelve pages devoted to external pelvic measurement while little more than one page is allotted to such a difficult and debatable subject as the management of patients with minor degrees of pelvic contraction. These are among the few criticisms that could justly be made of a volume that is readable instructive, and beautifully illustrated

Études sur le spina bifida

By **Jacques Leveuf** Professeur agrégé à la Faculté de Médecine de Paris Paris: Masson et Cie 1937 Pp 330 Fr 75

Considering that spina bifida is by no means rare among congenital abnormalities there has been but little authoritative work published on it during recent years. Text books, particularly in this country have adopted the classification propounded by Recklinghausen in the last century but few of them supply clear information on such important points as the relation of spina bifida to hydrocephalus and the exact constitution of the sac In this monograph Prof. Leveuf and his collaborators have set out the results of a most painstaking examination of 80 cases, with a detailed histological examination of operation and post-mortem specimens. Their account gains both in interest and in conviction from the wealth of diagrams and photomicrographs with which it is illustrated.

Prof. Leveuf has long held the opinion that the literature on spina bifida contains much that is artificial and that the classification requires revision as a result of his researches he believes that the latter is a much simpler task than has been supposed. He suggests that all spina bifidas fall into one of the following types 1 *ulcerated* in which the area medullosa is either (*a*) exposed or (*b*) covered by fibrous tissue (2) formes épidermisées (3) meningocele (4) spina bifida with tumour (lipoma) The development clinical features prognosis and treatment of these types are described with great lucidity On one important point the author is prepared to speak emphatically, spina bifida, so often loosely described as a protrusion of "the meninges" through the spinal canal, is really a protrusion of the leptomeninges through the dura The latter terminates at or near the base of the sac, and enters but little into its formation

Of particular interest is the chapter on hydrocephalus In Prof Leveuf's opinion it only occurs in the first two of the types referred to, it is of most importance in the second type because it is in these cases that operation is particularly indicated, owing to the danger of rupture of the sac It is well known that many of these infants subsequently develop hydrocephalus, and it has been thought that operation precipitates it Prof Leveuf is emphatic that this is not so, operation to some extent increases the number of hydrocephalics by prolonging the life of some infants who would otherwise have died before its development, but it neither causes nor aggravates it When signs of it are present operation is useless, but when they are absent operation should not be withheld on account of its possible occurrence Prof Leveuf does not accept the category of "spina bifida occulta" He believes that in the main it includes cases which will not stand the test of detailed examination, and that the term is destined to pass into disuse

Other aspects of spina bifida, such as embryology and surgery, are fully dealt with in this attractive volume, which should win for itself a permanent place in the neurologist's library

Common Skin Diseases

Fourth edition. By A C ROXBURGH, M A , M.D , F R C P , Physician in Charge of the Skin Dept and Lecturer on Skin Diseases, St Bartholomew's Hospital London H K Lewis and Co 1937 Pp 401 15s

A MANUAL which has undergone three revisions in a space of five years is in an enviable position Minor errors and defects are corrected, illustrations added or withdrawn as required, and the text both as regards ætiology and methods of treatment is kept up to date Dr Roxburgh's preface to this fourth edition shows how effectively he has made use of his opportunities Four of the coloured plates have been replaced by better ones, and 26 have been added to the large monochrome series, while valuable additions have been made to the paragraphs on gold and arsenical dermatitis, and the injection treatment of varicose veins, with a list of contra-indications well worth study

One of the best chapters in the book is that on dermatitis due to chemical causes, it includes some striking illustrations, notably one on p 80, demonstrating a positive patch test with a small chrysanthemum leaf, which should convince the most sceptical of the value of this test The statement that the clinical features of plant dermatitis are to be found on the hands and face will be accepted by all observers, but few will agree that the genitals are commonly involved (p 79), or that "all nickel platers eventually develop a dermatitis due to nickel salts" The assertion, too, that some patients "by graduated exposures become able to resist an irritant and can resume the work which caused the dermatitis" seems to need qualification for in the experience of most dermatologists the immunity is usually of short duration, while every relapse due to repeated exposure renders the dermatitis more intractable, and the patient less employable A short paragraph on the responsibility resting on the practitioner to take specially careful notes wherever a claim for compensation might be contemplated would add considerably to the value of this section Another addition which some practitioners might welcome is a tabulated list of the drugs and courses generally recommended in the treatment of syphilis, at least in so far as it affects the skin and mucous membranes The omission of such a section lends colour to the view that only the venereologist is qualified to undertake the management and cure of this important and still widespread infection These few criticisms are meant to be constructive We know of no better introduction in the English language to dermatology than this book, or one more likely to stimulate the student's interest at a price within his means

Historical Notes on Psychiatry

Early Times to End of Sixteenth Century By J R WHITWELL, M B , late Medical Superintendent, St Audry's Hospital, Melton, Suffolk London H K Lewis and Co 10s 6d

Dr Whitwell's book is a useful addition to the meagre literature in English on the history of psychiatry The opening three chapters deal with the ancient writings of Asia and Egypt, the Scriptures (including the Bible, Talmud, and Koran), and some classical examples of insanity—e g , Orestes, Agave, Hercules, Ajax The author has an agreeable way of discussing with apparent seriousness the differential diagnosis in these somewhat dubious cases, he complains, for example, that the great writers, from Homer to Euripides, who described the madness of Orestes, were insufficiently interested "in an accurate presentation of the facts Their accounts therefore show considerable divergence which makes a definite diagnosis extremely difficult," and he quotes Horace much as one might quote Kraepelin A brief review of the opinions expressed by Plato and Aristotle, and a longer account of those of the Greek and Roman physicians, from Hippocrates to Paulus Aegineta, leads to an easy going survey of medieval psychiatry, there is also an interesting excursus about the three disorders—epilepsy, incubus, and accedia

Although Dr Whitwell is occasionally uncritical and discursive, his book is entertaining and erudite, in the footnotes especially one finds many out of the way pieces of learning The last ninety pages of the work are given up to happily chosen translations and extracts from representative authors of the period under consideration

Maladies infectieuses

Second series By A LEMIERRE, Professor of the Faculty of Medicine, Paris Paris Masson et Cie 1937 Pp 310 Fr 55

THIS second volume published by Prof Lemierre contains a series of clinical lectures as interesting as those which graced the first one Readers of this journal will be interested to read his further notes on investigations of *Bacillus funduliformis*, other infections rare in Europe reported with admirable lucidity include spirochætosis and kala-azar Pitfalls in the path of the specialist in infectious diseases are recorded in the lectures dealing with the resemblance of certain cases of Hodgkin's disease to undulant fever and the evolution of acute leukæmia with the appearances of necrotic pharyngitis The work of the Claude Bernard Hospital is something so different from any to be found in London that this book should make a strong appeal to all physicians who want to broaden their knowledge

THE LANCET

LONDON SATURDAY, JULY 31 1937

THE NEW FREEDOM

Since the insurance medical service was started in 1911 the practitioner's range of activities has been ever more closely limited—there is hardly any object in creation which has been defined with more precision—but he still lacks the help of any properly organised consultant diagnostic or hospital services. Where they exist they are casual and sporadic. Once having accepted the King's shilling (or rather 9s.) the medical recruit accepts conditions as he finds them, and has little power to go beyond their bounds. Even the Voluntary Hospitals Commission can find no place for him in the existing hospital framework. But in one sphere of public life the inevitability of gradualness received a knock from Mr A. P. Herbert last week, and we on our part need not despair of the release of the panel practitioner from his shackles *within our time*.

Two significant things happened at the Belfast meeting of the British Medical Association. The Representative Body prolonged its session to await the arrival of a telegram from the Ministry of Health announcing the decision to start a far-reaching scheme of post-graduate study for insurance practitioners. Not as heretofore is participation confined to the rural practitioner and him only under some kind of means test, but every doctor who helps to run the national health insurance scheme is to be given the opportunity every five years of a fortnight's study unoppressed by financial loss. The fee for the course, his travelling and maintenance, and the expense of a locum tenent will all be borne from a State grant. Such courses have already been held at the British Post-graduate Medical School and three will be available there in the coming autumn; if when the scheme gets going the number of students should prove too great to be accommodated at Hammersmith the responsible authorities will doubtless look elsewhere. It may be questioned however what can be done within a fortnight. Is it reasonable to hope that within such a period a thoughtful and scientific interest in medical progress could be reawakened? This has been the primary object of those concerned with post-graduate teaching at Hammersmith. Less ambitious would be a course restricted to telling the doctor what he ought to know and what he ought to do. But whichever was the aim the fortnight would be an arduous one both for the taught and for the teachers, and we are not alone in wondering whether the plan now proposed, although it may be a great advance on what has hitherto been available, is the best possible solution. For example instead of bringing the doctor to the atmosphere we might send the atmosphere to the doctor. The solution would then be a post-graduate medical school giving detailed instruction to comparatively few men who would carry the torch into centres all over the country where groups of practitioners were attached to local hospitals.

The other significant thing was the result of an invitation to Mr Ernest Bevin to take part in a discussion later in the week in the section of medical sociology over which Dr Thomas Carnwath presided. Mr Bevin is chairman of the Trades Union General Council, which has recently been on speaking terms with the B.M.A. council with interesting results. Mr Bevin started from the quite proper assumption that the bulk of medical practice is and must be concerned with industrial work, and he was hoping that in the near future the B.M.A. and the Trades Union Congress would get together and ascertain the best way of reorganising a panel service in a position to apply scientific discovery more rapidly and efficiently to the needs of the people. The trade unions are, he said, as keen as anyone on the health of the community. Why should medicine not collaborate with them? Your individualism, he remarked, has been one of our greatest handicaps. His own remedy—more fundamental than fourteen days at a post-graduate school—was a variety of group practice in which 20 or 30 general practitioners would pool their panel patients and each have the chance of specialising on some phase of industrial medical work. Let the State or the local authority, he said, provide the accommodation and equipment for a central practitioners' clinic which would keep close touch with the local hospitals and a research institute, ensuring early diagnosis and prompt application of the appropriate treatment. The records thus obtained would, he thought, be of great value to the medical service, and furthermore they would assist in conquering the fear of the workers, primarily on economic grounds, to medical examination. In this fear Mr Bevin finds another great hindrance to industrial medicine. The worker regards the works doctor as employed by the manager to protect his own interests. When a man after some illness or injury is examined to ascertain his fitness for some particular occupation he does all he knows to get back to his job within the prescribed three weeks, and the fear of losing his livelihood overpowers every other consideration. We must recognise that in the depressed areas the rejections on medical grounds for a particular industry are already creating a new type of medical derelict. The works doctor as such must, Mr Bevin thinks, disappear from the order of things and be replaced by a joint body not representing one side only. How gladly would the workers welcome an overhaul of the whole industrial medical service; and here he was at one with Dr L. P. Lockhart who introduced the discussion: it was no use, said Dr Lockhart, working out the fitness of workers for particular tasks if we had no social mechanism for effecting transfers or absorbing misfits where they would be assets What was needed was an education in biological interpretation

There are a tremendous number of small factories for the health of which, in the natural order of things, insurance practitioners should be chiefly responsible—factories employing between 100 and 250 persons, and accounting for more than 20 per cent of the workpeople in the country The passing of the Factories Bill, the openings for post-graduate study, and the possibilities of local organisation may yet release those in general practice from their growing sense of frustration

FILARIAL PERIODICITY

THERE are two possible explanations of the presence of the embryos of *Filaria bancrofti* in the peripheral blood at night and of their virtual disappearance during the day In the first place the embryos may shelter in some internal organ or in the great vessels during the day and migrate to the peripheral vessels at night This is the view that PATRICK MANSON in 1882 regarded as the right one, and it remained unchallenged for some fifty years The other possibility, which W, W MYERS had put forward in 1881, is that the female adult worms produce embryos simultaneously and at a definite time in each 24 hours, and that these embryos are destroyed daily by the defence mechanisms of the host MANSON was led to his decision by experiments on dogs infected with the *Dirofilaria immitis*, which shows a similar though less definite periodicity He found that if such dogs were killed with prussic acid at 6 A M , when embryos were scarce in the peripheral blood, they could be found in large numbers in the lungs Apparent confirmation of this view was provided in 1897 by a man who, being known to be heavily infected with the *F bancrofti*, and to show a typical nocturnal periodicity, died after taking a dose of prussic acid at 8 30 in the morning , for vast numbers of embryos were found in his lungs and in the large blood-vessels of the thorax Recording this case in 1898, in the first edition of his “ Tropical Diseases,” MANSON assumed that in sudden death, such as occurs from prussic acid poisoning, there would be no appreciable flow of blood or lymph after death, and that the embryos were therefore lurking during life in the positions in which they were found post mortem

In the past few years CLAYTON LANE[1] has cast doubts upon the generally accepted view of MANSON, and has produced evidence that supports the theory of MYERS He quotes[2] experiments on dogs undertaken at his suggestion by DRINKER and FIELD at Harvard which show that, after death from cyanide poisoning, lymph goes on flowing from the thoracic duct for some $\frac{1}{2}$–$1\frac{1}{2}$ hours, and he holds that it was this post mortem flow of lymph that carried the microfilariæ from the post-thoracic lymphatics into the great blood-vessels where MANSON found them in the man who died after taking prussic acid If LANE's view is correct, all live female worms in the same tissue or body should be found to be at the same stage of embryonic development at the same hour, and O'CONNOR[3] of Columbia University, who made an extensive study of sections of excised lymphatic glands, testicles, and other organs infected with *F bancrofti*, found that, provided they were alive when excised or when their host died all female worms from the same source were in fact at the same stage of pregnancy, in whatever kind of lymph vessel they lay He believed that the cycle of pregnancy is so timed—at least in relatively healthy persons—that the birth of microfilariæ shall take place about midday , but Low and MANSON-BAHR[4] have not considered these observations conclusive, and so far no attempt has been made by other workers to confirm or refute them

In his latest paper[2] CLAYTON LANE writes on the mechanism of the destruction of the microfilaria in the body In an infected person, he says, embryos are prevented from reaching the blood stream by the lymph glands and, in the testis at least, by other reticulo endothelial tissue, until the lymph glands have been put out of action by blockage and subsequent by passing by the formation of new lymph channels , and in sections of these tissues embryos can be seen in process of destruction by cells of the reticulo-endothelial system In LANE's opinion it is the mobile cells of this reticulo endothelial system that are responsible for the destruction of microfilariæ when they have reached the blood stream That rapid destruction, or at least disappearance, of microfilariæ does at times take place has been amply demonstrated by MURGATROYD,[5] KNOTT,[6] RAO,[7] and others, who have found that when microfilariæ are injected in large numbers into the human blood stream none can subsequently be found in blood films in most cases even after the lapse of a few minutes , and when they have been so found in man or beast the findings are just those that might be expected were the reticulo-endothelial system blocked Direct anatomical evidence of massive destruction of microfilariæ is at present scanty, but LANE quotes one case of O'CONNOR's in which a man died at 1 15 A M of aortic disease and post-mortem examination showed normal embryos in the lungs, while in the spleen and liver they were present in more or less advanced stages of degeneration This finding suggests that destruction was actually taking place in these organs, though it is possible that the degenerate embryos may have drifted to the liver in the splenic vein and have been filtered out there The question could presumably be settled by systematic examination of the spleen, liver, and bone marrow after death had taken place at different hours in persons in whom periodicity is known to have been maintained to the end Information might also be obtained from sections of liver taken during abdominal operations on infected persons Such investigations would be well worth making seeing that this conception of the reticulo-endothelial system as the destroyer of circulating microfilariæ alters the whole pathology of Bancroftian filariasis

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[1] Lane, C *Lancet* 1929, 1 1291

[2] Lane, C *Trans R Soc trop Med Hyg* June 1937 p 61

[3] O Connor F W *Ibid* 1932, 26 13

[4] Low, G C, Manson Bahr P H and Walters A H *Lancet*, 1934 2 531

[5] Murgatroyd, F *Ibid* 1933 1, 610

[6] Knott J *Trans R. Soc. trop Med Hyg* 1935 29 59

[7] Rao S S *Rep Calcutta Sch Trop Med* for 1935 p 143

THE PREVENTION OF SILICOSIS

JOINT attack on a common problem by workers in different branches of science is a method now being applied with much success in the study of industrial diseases silicosis research for example, has attracted investigators in the physical as well as the biological sciences In this country the Medical Research Council has sponsored studies of the mineralogical and chemical properties of mineral dusts as well as of the pathological aspects of the problem Numerous investigators working alone or as members of a team, have made noteworthy contributions to the subject and the suggestions put forward by workers in one field have often been of great service to those in another We commented only recently on the work of Prof BRISCOE and his colleagues[1] on the highly reactive nature of newly formed mineral dust A prophecy that the faces of freshly fractured particles might prove to have special properties due to exposed and unsatisfied valencies was made in 1932 by Dr HEFFERNAN[2] from a consideration of the work of Sir WILLIAM BRAGG on the lattice structure of crystals Now comes an account of an experiment on the quartz-dusting of rabbits which appears to confirm the physical and chemical implications DENNY ROBSON and IRWIN[3] working in Toronto and at the McIntyre Mine Schumacher Ontario have enlisted chemistry and experimental pathology to supplement and support a hypothesis originally made on the basis of purely physical theory Nodular fibrosis has been produced in some rabbits lungs in the course of a dusting experiment of six months duration This was accomplished by a daily exposure of the rodents to dust freshly formed by a special pulverising apparatus carried in the animal chambers The uniformity and ease with which fibrosis seems to have been produced in these animals is noteworthy in view of the general failure to cause fibrosis in rabbits by dusting experiments except after prolonged exposure sometimes as long as two years The dust preparations hitherto used were made by grinding samples of the rock and preserving them in the powdered state On the present hypothesis such samples would be considered "stale" and to have lost their activity

DENNY ROBSON and IRWIN base their work on the 'solubility theory' of silicosis according to which the chemical reaction and not the physical presence of siliceous material is responsible for the production of fibrosis in silicosis If we could prevent the dust particles from dissolving we might abolish their fibrosis producing capacity and this result seems actually to have been achieved in the experiments described A detailed study was made of several substances that might be supposed to influence the solubility of silica and it was found that a small amount of finely divided metallic aluminium would almost completely suppress the dissolution of powdered quartz and silica sand in water This finding led to a parallel dusting experiment in which rabbits were exposed to dust freshly formed from a mixture of lumps of quartz and aluminium pellets In these animals the tissue reaction was essentially a foreign body response contrasting in a striking manner with the proliferative fibrotic response seen in the lungs of the quartz-dusted animals'—and this despite the fact that the lungs of the aluminium treated animals contained more quartz of the same degree of fineness as judged by both chemical and microscopical tests The report of these experiments is only a preliminary one only 6 rabbits were used in the quartz group and 7 in that with quartz plus aluminium, but the results it is claimed are uniformly consistent in each group and the findings in a large-scale experiment with several different kinds of animals which has now been in progress for some months are said to be in keeping with those recorded

The question of the relation of infection to silicosis is of course left untouched by this work, and indeed also by most of the publications on experimental silicosis E H. KETTLE, who broke new ground with experiments on the combined action of mineral dusts and the tubercle bacillus was convinced of the importance of the infective factor in the causation of the disease With this combination he was able to elicit a type of response much more akin to that observed in humans than could be obtained with dust alone The essential lesion of pulmonary silicosis may indeed be primarily an infective one which is aggravated and modified by the dust rather than a tissue reaction to dust particles on which an infection may be superimposed POLICARD and DUFOURT[4] emphasise this possibility in a paper describing experiments in which B C G was used with mineral dusting Crystalline silica has long been known to produce dangerous dust but iron coated silica is inert even in combination with the tubercle bacillus[5] It would be interesting to know the tissue response to quartz dust plus aluminium powder when used in conjunction with this bacillus The Canadian workers have made a discovery that may prove of fundamental importance in experimental work on silicosis It remains to be seen whether their findings will give the key to a means of retarding, if not actually preventing silicosis in man.

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[1] See *Lancet* May 22nd, 1937 p 1236
[2] Heffernan P., *Tubercle* 1932 14 109
[3] Denny, J. J., Robson W D and Irwin D A., *Canad. med. Ass* J July 1937 p 1
[4] Policard, A. and DuFourt, A. *Ann. Méd.* 193 41 183
[5] Kettle E H., *J Path. Bact* 1932 35 395; *Ibid* 1934 38 201

GUEST HOSPITAL, DUDLEY—The contributory scheme inaugurated here three months ago, has already a membership of 32 406 and an annual income of over £16,000 is assured The hospital is being rebuilt in stages and new X ray and massage departments are being provided

ANNOTATIONS

SALVAGE OF SCHOLARSHIP

WHEN the Academic Assistance Council was formed in May, 1933, for the purpose of helping university teachers and investigators who, on grounds of religion, political opinion, or "race," were unable to go on working in their own countries, it was hoped that the need for such help would be only temporary and that by 1936 the Council would have completed its task This hope was by no means realised In Germany the dismissals of "non Aryans" after the National Socialist Government's accession to power in March, 1933, were followed by further dismissals, due in particular to the Nuremberg legislation of 1935 and to more recent rules which exclude from office those who have Jewish wives or who refuse to take the oath of loyalty to the Leader, and also some who have become embroiled in church conflicts Further, it became increasingly clear that a permanent organisation was needed for the assistance of refugee scholars from other countries—Austria, Russia, Italy, and Portugal for example—who had been compelled to resign their posts because of their political opinions or their "race" In March, 1936, therefore, it was decided to continue the Academic Assistance Council as part of a permanent body, the Society for the Protection of Science and Learning, which should be financed by donations and by the subscriptions of its members

Apart from its humanitarian aspect, the value to mankind of the work done by this organisation and by its co workers is substantial About 1600 university and other scholars have been displaced from their posts in Germany, and continuance of their work in their own country has been made impossible by denying them access to laboratories and libraries, by forbidding them to lecture, and by allowing them to publish their writings only through non Aryan publishers, besides which they have had to face the prospect of heavy disabilities being placed upon the education and training of their children On the other hand, they have not been allowed to take money across the border and cannot therefore subsist elsewhere unless they can find remunerative employment The experience and ability of these men would thus have been lost if there had not been some scheme for the placing of emigrants in posts abroad So far about 800 have left Germany, and the Society and those organisations that collaborate with it have been able to find for almost all of these either permanent or temporary appointments in universities or industrial concerns in the United States, Great Britain, Palestine, Turkey, or other countries The civil war in Spain has been the cause of the emigration of about 60 scholars, who may or may not be prevented from ever returning to their country, and the Society has made some temporary grants to these unfortunates, pending a settlement of Spanish affairs

The aim of the Society has been not so much to provide temporary relief for refugees, as to re establish them For this purpose it maintains a central appointments bureau in London,[1] makes emergency grants to those who have secured what may become permanent employment, and allots a limited number of research fellowships to those of outstanding ability Representatives of all branches of science appear in its records, but the majority are workers in medicine, chemistry, physics, or economics The Society coöperates closely with the organisations that deal with the relief of other classes of refugees, so that there is no overlapping and no waste of effort, and although it is at present issuing no public appeal for funds it is anxious to increase its membership so that its income shall be stabilised and not dependent upon chance gratuities

PHARMACY AND THE PHARMACIST

THIS week, for the fourth time since it was established, the British Pharmaceutical Conference has held its annual meeting in Liverpool. It was the 74th of the series and, fittingly, the chairman was Mr T E Lescher, whose family and those associated with the old established house of which he is now the head, have been linked with the work of the Conference ever since its foundation Mr Lescher holds the craft of pharmacy in high esteem "The physician," he said in his inaugural address, "looks to the pharmacist to give him information in connexion with a product which may have been brought out only yesterday," which means that the pharmacist has to exercise unceasing vigilance. When the first meeting was held in Liverpool in 1870 there was no such thing as an aspirin tablet, and indeed no such thing as a tablet of any kind. Chloral hydrate had only just been introduced into medicine, and the stock in trade of the pharmacist consisted almost wholly of vegetable drugs and their preparations, with a comparatively small group of mineral salts Great changes have been seen since those far off days, the earliest British Pharmacopœia had then but recently appeared, and the marvels of synthetic chemistry had not been seen in dreams Even during the last decade, as Mr Lescher reminded his audience, the advance in medical knowledge is "little less than amazing" The emphasis, he said, is changing from the alleviation of symptoms to the removal of causes, and the number of products introduced for this second purpose is already almost infinite If pharmacy is to be the faithful handmaid of medicine, pharmacists must equip themselves with knowledge accordingly

The British Pharmaceutical Conference encourages pharmacists to study the development of new products so that their work as handmaids may be the more useful, but its objects and traditions go deeper than that, for it was also founded to stimulate research in pharmacy and this policy has been kept ever in view The papers read year by year are evidence of enterprise in the advancement of pharmaceutical knowledge, and the conference affords opportunity both for publication and for criticism One would have expected that the work of the past 74 years, which has added much to the sum of knowledge of the properties of drugs and their preparation for medical use, would have earned for pharmacy "a recognised position more in keeping with its responsibilities" The words quoted are from the chairman's address, and must not be regarded as any reflection of our own upon the standing or capabilities of the handmaids of medicine But no one can disagree with Mr Lescher's comparison of the status of pharmacy in this country with its status in most European countries, where the services of the pharmacist in the interests of health are logically recognised. Pharmacy on the continent has official standing to a greater degree than it has in our own country, and it is not in dispute that "our present system in Britain of allowing anyone to handle drugs and medi cines in payment of a five-shilling licence encourages the exploitation of the public by the distribution of cure alls without the slightest guarantee of any knowledge on the part of the vendor of their properties As the chairman added the sense of responsibility that comes from training is needed to assure the safe and proper distribution of drugs and chemicals to the public

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[1] Society for the Protection of Science and Learning, 6 Gordon square London W C 1

CHRONIC RHEUMATIC DISEASES

The urgent cry of the large number of sufferers for some measure of relief from the rheumatic diseases naturally fixes the attention of most workers on this subject on the immediate and empiric problems of treatment and treatment is the theme of most of the papers published in the third annual volume[1] just issued by the British Committee on Chronic Rheumatic Diseases This work provides a collection of papers representative of current research and informed opinion in this country together with Dr P S Hench's admirable survey of the last year's work in America, and a few abstracts of continental papers There has been no advance worth speaking of in elucidating the cause and mechanism of the rheumatic diseases Prof. C C Okell begins with a short authoritative examination of the value of vaccines in the treatment of rheumatoid arthritis as a bacteriologist he can find no rationale for their use and as an intelligent scientist he can find no acceptable evidence that used empirically they have produced any good effect on the disease process Prof J R Learmonth discusses sympathectomy in arthritis The operation can be relied on to change a cold clammy limb into a warm dry one it often relieves pain and sometimes improvement in the arthritic condition has been reported but at best it is only symptomatic treatment and it is justifiable only in young patients with intractable progressive rheumatoid arthritis affecting the more peripheral joints and with some degree of abnormal vasoconstriction Dr Gunnar Kahlmeter of Stockholm describes his extensive experience of X ray treatment the value and limitations of which are still rather ill-defined in England. Dr W S Tegner communicates an excellent interim report on the use of gold in France and England where several careful observers have gathered further evidence of its beneficial effect in rheumatoid arthritis America is still in Dr Hench's words off the gold standard But across the Atlantic, on the other hand workers in the United States take much more interest than do those here in the treatment of gonorrhœal arthritis by artificial fever this method has a rational basis and apparently striking clinical success has been obtained Among the shorter papers is a useful reminder from Dr H E Archer and Mr G Discombe of the possible dangers attending the use of certain drugs—methæmoglobinæmia with phenacetin agranulocytosis with amidopyrine and its many disguised combinations and cincophen jaundice Apropos of the last Dr G H Jennings provides a neat little demonstration of the fact—already known but too often ignored—that sodium salicylate promotes the excretion of uric acid and a lowering of its concentration in the blood in gouty patients, just as effectively as atophan does

This report indicates the scope of the committee's influence on the scientific side it is modest but sound and still we may hope, only in the nature of a beginning But there is another side to the rheumatism problem the economic and administrative task of making available to all sufferers such benefit as present medical knowledge can bring them There is a long lag in this as in other branches of medicine between the advance in knowledge and its proper and widespread application To shorten that lag is a large part of the plan of campaign of the Empire Rheumatism Council which was founded by the rheumatism committee of the Royal College of Physicians of London eighteen months ago and whose appeal for funds is now being made Prof. F R Fraser commends it to notice in a foreword to this volume and few would grudge it support Expenditure on research is always touching the immediate end in view speculative great discoveries will certainly be made in the future as in the past but no one can foretell just where or by whom Expenditure on the treatment of rheumatic diseases by the established physiotherapeutic methods is a gilt-edged investment certain to produce relief of suffering and increased economic usefulness The Empire Rheumatism Council may be expected to spend its money wisely in both of these directions

THE BUDGET OF LONDON VOLUNTARY HOSPITALS

The Statistical Summary of the income expenditure work and costs of 145 London hospitals published annually by King Edward's Hospital Fund for London gives a lot of information for a shilling The issue for 1936 is now to hand.[1] This year the Croydon German and London Homœopathic Hospitals, having acquired more accommodation have been promoted to Group II (general hospitals without medical schools having a complement of more than 200 beds) the Bromley Hospital has hopped from Group VI straight to Group IV having increased its bed complement from 50 to 90 (including 2 pay beds) the other hospitals have remained in the same groups It is a condition of subsidy by the Fund that income and expenditure accounts shall be kept according to a uniform system The expenditure is arranged under appropriate headings to enable the managers of general hospitals to ascertain whether the cost of any items is unduly high in comparison with other hospitals of approximately the same bed complement Among special hospitals the comparison is with others admitting patients of a similar type, sex or age. The chief items of ordinary expenditure are arranged as provisions surgery and dispensary domestic, salaries and wages (maintenance) miscellaneous administration establishment and finance The number of occupied beds is stated for each hospital as well as the total out patient attendances in the year Some curious contrasts are noticeable. For example, one special hospital has had 54 2 per cent of its beds vacant during the year This would seem to imply that it is not really needed in its district or for some reason is unpopular but reference to another table shows that 90·5 per cent of its annual receipts is derived not from voluntary gifts but is received on account of services rendered—i e payments from patients from public authorities from fees and so forth. There is moreover a surplus of income over expenditure amounting to 46 per cent for the year It should be added that the cost per occupied bed (£117 4) is very low At the other extreme and in a different group is a general hospital deriving only 12 3 per cent of its total receipts from services rendered. Its deficit for the year is £614, or 7 3 per cent of its total general expenditure Only 26 7 of its beds are vacant and the statistical cost per occupied bed is even lower—i e, £111 2 It is not easy to interpret these contrasts in general terms or to draw conclusions from the analysis here provided

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[1] Chronic Rheumatic Diseases, being the third annual report of the British Committee on Chronic Rheumatic Diseases appointed by the Royal College of Physicians. Edited by C. W Buckley M D , F R.C.P London H K. Lewis. 1937 Pp 131 10s 6d

[1] Obtainable from the offices of the fund at 10 Old Jewry London E.C.

Emphasis is again laid by the Fund on the fact that high cost does not necessarily mean excessive or extravagant expenditure, though figures above the average for the particular group of hospitals need scrutiny Hospital managers are urged to attempt to detect the source of any excess expenditure and "to reduce it wherever it cannot be justified or to justify it wherever it cannot be reduced "

"IT CAN DO NO HARM"

THIS facile phrase, quoted by Dr Colebrook in his letter on p 286 condemning the indiscriminate use of sulphanilamide or related drugs, has been responsible for much confusion in therapeutics Moreover—and this is more serious—it has often had to be withdrawn when applied prematurely to potent new remedies whose dangers are not at first apparent Dr Colebrook is asking for greater caution in the use of sulphanilamide for prophylactic purposes and he speaks with authority when he says that there is no experimental justification at present for giving this drug to pregnant women before labour has actually started The object of giving it as a prophylactic, either in labour or in other conditions, is almost always to prevent harm from hæmolytic streptococci, and where the risk of sepsis is small it has to be balanced against the risk of harm being caused by the drug itself—a risk that is at least appreciable and may yet prove to be graver than is now believed. There is no need, however, to recapitulate Dr Colebrook's argument Its wisdom is made all the more evident by the footnote he has added to his letter

IS PITUITRIN A HORMONE?

THE path of the endocrinologist is beset with snares, and one of the most awkward is the uncertainty whether a particular extract of a gland is a true hormone or merely a chemical artefact Where the hormone in question is of uncertain composition and not demonstrable in the blood or urine the uncertainty can only be resolved by appeal to circumstantial evidence Parathormone, for instance, has so far defied analysis and cannot be detected in blood. Yet there is hardly room for doubt that it is concerned in normal calcium metabolism The presumed hormones of the posterior lobe of the pituitary, in contrast, are less securely enthroned Vasopressin is certainly capable of constricting vessels and raising the blood pressure, but it would need a great deal of assurance to assert that this substance is concerned in the normal regulation of blood pressure The antidiuretic hormone, which may or may not be the same as vasopressin, acquires some degree of verisimilitude from the facts that diabetes insipidus is commonly associated with destructive lesions in the pituitary hypothalamic region and that it responds to treatment with vasopressin More direct evidence of natural secretion of the hormone has been sought for many years but, although it has been stated from time to time that pituitrin is demonstrable in such fluids as blood and cerebro spinal fluid, none of these statements has stood the test of time, and it is evidently beyond the scope of available methods to detect directly such minute concentrations of hormone as may be present Concentrating the suspect fluid is at first sight an easy way out of the difficulty, but the parallel increase in salt concentration makes the concentrate unsuitable for antidiuretic assay Gilman and Goodman,[1] however, working with rats' urine, have surmounted this obstacle by dialysing the urine against tap water across a Cellophane membrane permeable to electrolytes but not to antidiuretic hormone Having thus removed the salt, it was a simple matter to concentrate the remaining solution of hormone Gilman and Goodman began their work on the assumption that if the antidiuretic hormone serves any useful purpose it is presumably that of conserving body fluid in the face of threatened dehydration They found that urine from normal rats contained no demonstrable antidiuretic hormone, but if the rats were dehydrated, either by fluid restriction or administration of hypertonic saline, considerable quantities of hormone could be recovered from the concentrated urine A dehydrated rat may excrete as much as 0 25 unit of antidiuretic hormone in 72 hours—i e, about 250 times the minimal dose that will inhibit diuresis The greatest rate of excretion is reached within 48 hours, and further dehydration does not increase the rate That the excreted hormone is derived from the pituitary is shown by the fact that hypophysectomised rats excrete none in response to dehydration It seems clear, therefore, that in the rat, at least, the antidiuretic hormone is a true hormone concerned in normal water metabolism If it can be shown that the same is true of the human subject, it should become possible to investigate the rôle of this hormone in disease

VITAMIN F AND THE COMMON COLD

FROM an experiment on rather a small scale Oncken[2] concluded that consumption of oils containing unsaturated fatty acids might prevent colds. This possibility has now been further explored by Eldon Boyd and Ford Connell,[3] of Queen's University, Kingston, Ontario A total of 106 young men, mostly medical students, coöperated in their investigation They were divided into two groups, 41 who said they were susceptible to colds and 65 who said they were not Both groups were observed over a preliminary period of seven weeks beginning on Jan 1st of this year, during which the "susceptibles" had 63 colds, or 1 54 per person, and the "non susceptibles" had 53, or 0 82 per person The average duration of each cold was 7 2 days in the first group and 4 7 days in the second. During a second period of seven weeks each of the susceptibles was given 15 minims daily of vitamin F (a purified concentrated mixture of linoleic and linolenic acids prepared from refined linseed oil), the non susceptibles served as controls During this time the 41 susceptibles had 23 colds (compared with their previous 63) or 0 56 per person, with an average duration of 4 5 days The 65 non susceptibles had 41 colds (compared with their previous 53) or 0 63 per person with an average duration of 6 1 days In other words the incidence fell nearly twice as heavily on the susceptibles during the first period, and the average duration of their colds was longer, whereas in the period during which they were specially treated they were slightly better off than the non susceptibles. It is necessary, however, to look carefully at this result The original division of the two groups is not ideal; it would have been better to have divided the men at random to make the groups initially equal. Clearly if some other factor were in issue—e g a seasonal distribution of colds—it would have more scope to show itself in those who had many colds in the first period than in those who had few To obviate this possible effect one may compare the men in groups with equivalent experiences in the initial period There were 8 susceptibles and 26 *non susceptibles who had no colds at all in the first period* three-quarters of the former and just over half the latter had no colds in the second period also There were 14 susceptibles and 29 non susceptibles who had one cold in the first period of the former 57 per cent and of the latter 48 per cent were better off by having no cold in the second period. And taking a final broad group to give bigger numbers there were 19 susceptibles and 10 non-susceptibles who had two or more colds in the first period of the former 84 per cent and of the latter 80 per cent had fewer colds in the second period than in the first. Each comparison it will be seen slightly favours the treated group but the differences viewed in this way are quite small. It must also be noted that 14 of the 41 men under treatment or roughly a third reported disagreeable reactions after taking the doses of purified linoleic and linolenic acids Diarrhœa nausea and vomiting were the chief effects Usually these symptoms were temporary and disappeared on taking the substance with meals rather than between them but sometimes treatment had to be stopped.

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[1] Gilman A and Goodman, J *J Physiol* 1937 90, 113.
[2] Oncken M *Illinois med J* 1935 67 230
[3] Boyd E M and Connell W F, *Canadian med Ass J* July, 1937 p 38

On the whole the results of this study are suggestive but certainly not conclusive or even greatly encouraging

PROFESSIONAL REGULATION

THOUGH Parliament has not yet passed it into law a Bill has been printed which proposes to set up a register of hairdressers and to empower a central authority to strike names off the register for infamous conduct. Those last two words, in their original context in the Medical Act have puzzled many It is an indirect and unexpected compliment to the professional organisation of medical practice that they should be revived to day Whatever the connotation of infamy it is at any rate a public advantage that a body of persons practising a common vocation should be encouraged to regulate standards not only of skill but also of ethics Last January Mr Justice Atkinson observed of certain unqualified practitioners (in Sones *v* Foster) that while anybody can call himself a naturopath the more reputable have formed associations and have done their best to establish standards by instituting a system of examinations. In the July issue of the *British Journal of Physical Medicine* Dr Gerald Slot quotes this judicial dictum in the course of discussing the status and legal position of unqualified practice. Dr Slot regards as desirable the movement towards incorporating the various societies which demand proper training The public, he says would like the chance to assure itself of the credentials of the unregistered practitioner; at present the impressive letters used after a man s name can be most misleading In Sones *v* Foster where the learned judge was a trifle severe on the orthodox practitioners assumption of a monopoly of knowledge of the healing art it was laid down that people need not consult an unorthodox practitioner unless they like but if they do consult him they have the right to expect the average skill, knowledge, and efficiency of the body to which he belongs This statement however scarcely takes into account the difficulty of establishing the average standard there is seldom a recognised body to formulate anything of the kind the different cults disagree Dr Slot is ready to concede that medicine tending to conservatism owes a debt to unqualified practice osteopathy and naturopathy for instance have usefully drawn attention to manipulative surgery and dietetics. But he concludes *that intimacy with disease gives the best* prospect of successful treatment and that the necessary knowledge is obtained only by a real study of pathology and by daily contact with illness. Unregulated practice it may be added, shows itself specially dangerous to the public when it descends to the more specious abuses of advertisement

CALCIUM AND PHOSPHORUS IN BONE DISEASES

BONE, like fibrous tissue consists of cells and a matrix of fibres but has in addition a high content of mineral matter The exact chemical nature of this mineral deposit is not certainly known but it is usually considered to be a complex carbonato phosphate of calcium In those clinical conditions where there is a withdrawal of the mineral material or where it is improperly deposited it is usual to speak of *decalcification,* or a *failure to calcify* *It is* difficult to see why the emphasis should have been laid traditionally on the calcium; it would be equally reasonable to speak of dephosphatisation and a failure to deposit phosphate

Largely it may be presumed because of the emphasis on the metallic component of bone salt, we have come to think of diseases like Paget s and osteitis fibrosa as being due to an inability to hold calcium and rickets is commonly regarded as a condition resulting from the improper absorption of calcium from the gut But this view has been hotly contested—e g by Taylor and Weld[1]—and the effect of vitamin D has been held to have nothing to do with the absorption of calcium although some recent work from Cambridge[2] appears to indicate that for the rat at least there is a relation between the gut absorption and the vitamin. It is a commonplace however that the serum calcium of children suffering from rickets is at a normal level, while the plasma phosphate is commonly lowered. Kay and Guyatt[3] suggested that experimental rickets due to vitamin D deficiency is attributable to a failure to absorb sufficient of the dietary phosphorus They succeeded in producing a phosphorus deficient rickets by precipitation of the phosphate in the gut as the highly insoluble phosphate of beryllium, by addition of this element to the diet. Likewise strontium rickets has been observed,[4] although Sobel Cohen and Kramer[5] are inclined to think that the phenomenon is a more complex one than a simple removal of the phosphate ions.

In a recent communication from the Onderstepoort Institute for Veterinary Education and Research South Africa Du Toit and Malan[6] claim to have shown that in domestic animals rickets is due to a deficiency of dietary phosphorus Cattle goats sheep pigs and horses have been found to develop a rachitic condition on dietaries which lacked only phosphorus, being adequate in other respects, including calcium and vitamin D They find that insufficient calcium does not produce rachitic lesions, but instead an entirely different bone disease—an osteodystrophia fibrosa (osteofibrosis) Osteoporosis was invariably associated with both diseases In typical experiments calves and steers received diets of which the only deficiency was in the amounts and proportions of calcium and phosphorus With abundant calcium but low phosphorus, severe rickets and osteoporosis developed, but no osteofibrosis With an inadequacy of both calcium and phosphorus, rickets developed early in the experiment with osteofibrosis later Excess of phosphorus with low calcium led to the production of osteofibrosis and bone atrophy, but rickets did not develop Abundant vitamin D was present in all experiments

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[1] Taylor N B and Weld, C. B., *Brit J exp Path* 1932, 13 109

[2] Nicolaysen, R *Biochem. J* 1937, 31 107 122

[3] Kay, H D and Guyatt B L *J biol. Chem.* 1931 92 xl.; *Nature* 1933 131, 468

[4] Sobel A E., Goldfarb, A. R., and Kramer B *Proc. Soc exp Biol Med* 1934 31 869

[5] Sobel A. E. Cohen, J., and Kramer B *Biochem. J* 1935 29 2640

[6] Du Toit P J., and Malan A I *Nature* 1937 140 153.

These South African experiments should promote a better understanding of the ætiology of the generalised bone diseases, and a more proper estimate of the relative importance of the factors thought to be involved The emphasis in current use is probably correct when we speak of "decalcification" in von Recklinghausen's and Paget's diseases, but if the mineral metabolism of humans is the same as that of the animals tested we would perhaps be nearer the truth if we thought of rickets and osteomalacia as derangements of phosphorus metabolism, instead of stressing the calcium side of the picture, as has been the general custom. The practical application of the change of outlook engendered by experimental evidence as far as humans are concerned, depends on this question of the similarity of mineral metabolism It seems at least possible that in the future the widespread use of vitamin preparations, either in conjunction with or containing calcium (usually as the gluconate), for children and nursing mothers, will give way to the use of preparations which contain phosphorus in proper proportion

ANALYSIS OF SUSCEPTIBILITY TO CARCINOMA

SOME carefully planned and conducted experiments on the combined action of œstrone and benzpyrene on the skin of mice are recorded by Dr M D Gilmour[1] She finds that if the two substances are applied simultaneously to different patches of skin, or if the œstrone is given a lead in time, the treated animals then develop a greater number of papillomata, and do so at an earlier date than do control groups treated with the benzpyrene alone Moreover a larger number of the papillomata become malignant under the combined treatment The meaning of these experiments may not at first sight be apparent What they do is to give some insight into the term susceptibility When, for example in a group of workers exposed regularly to the same dose of coal-tar or shale oil, a certain proportion develop warts at the cancer age, and certain others at an earlier period of life, while the remainder do not produce tumours at all, we say that the group shows differing degrees of susceptibility to the same carcinogenic agent We have no idea wherein this susceptibility lies Gilmour's experiments go some way towards an analysis Translated into terms of human life they might indicate that of a group of workers exposed to carcinogenic agencies, those in whose circulation there is excess of œstrone would be the first to develop papillomata, and among them there would be a greater number with lesions The effect of œstrone must be very potent for it can raise the total number of warts which appear in mice by about 30 per cent There still may remain some mice which are completely resistant to either agent or both, but to this insusceptibility we have as yet no more than the clue, though a strong one, afforded by the recent work of Peyton Rous on the Shope papilloma virus Another important aspect of the work on the combined action of œstrone with a carcinogen arises from the probability that œstrone has a general constitutional effect Its action is not exerted on mammary gland cells alone, as might have been thought from a consideration of the early experiments of Lathrop and Loeb,[2,3] and the more recent ones of Lacassagne[4] Nor is it confined to endocrine organs as the work of Cramer and Horning[5] at one time seemed to indicate, or even to generative organs[6] Gilmour's work shows that epidermal cells also can be affected by œstrone though detection of any action is indirect The question next arises does this hormone exert any specific effect on cells already malignant? Gilmour's answer is in accord with all other experience concerning malignant cells Once the change has taken place, the chemical or physical agent which played a part in causing it no longer has any influence on the subsequent course of the tumour

MEASLES SERUM

THE London Fever Hospital has asked us to state that, owing to the difficulty of obtaining a large amount of convalescent measles serum its small supply, while always available for the general public, has to be reserved for young children and more especially for weakly and ill children in whom an attack of measles would be dangerous It is impossible to supply this serum for every contact The hospital authorities hope that publication of this information will obviate irritation or disappointment arising from a refusal of help to practitioners who wish to protect older people The resident medical officer is always glad to hear of cases in which it is permissible for him to provide the serum

IN our leading article last week on Anomalies in Health Insurance we said that according to the Fourth Valuation the number of insured persons belonging to societies that find themselves unable to give additional benefits is 2,219,525, "comprising 22 per cent of the insured men and 25 per cent of the insured women" These percentages should be 12 per cent and 15 per cent respectively, as is evident from the summary of the Report published on p 222 of the same issue

THE Goldsmiths Company have offered a sum of £6000 to found and equip an observation centre for child delinquents, if arrangements can be made for it to be maintained under suitable management To such a centre the courts will be able to send children who are psychologically maladjusted, and there they can be watched for a few weeks by experts under medical guidance The centre will be used mainly for children in the London area In announcing the offer the Home Office expresses appreciation of the public spirit of the Company Their offer will in fact make a beginning in filling a distressing gap in our penal system

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[1] Gilmour M D *J Path Bact* 1937, 45 179

[2] Lathrop A E C and Loeb L *J Cancer Research* 1916 1 1

[3] Loeb L *J med Research* 1919 40 477

[4] Lacassagne A *C R Acad Sci Paris* 1932 195, 630

[5] Cramer W and Horning E S *Lancet*, 1936 1 247

[6] Perry I H, and Ginzton L L, *Amer J Cancer* 1937, 29 680

SPECIAL ARTICLES

A STATISTICAL CONTRIBUTION TO THE HISTORY OF EXAMINATIONS OF MEDICAL STUDENTS

By Prof Major Greenwood D Sc, F R C P F R S

AND

E Lewis Faning B Sc. Ph.D

Thanks to the energy of Sir Philip Hartog and his colleagues the rights or wrongs of examinations are a question of the day and have stimulated psychologists, mathematicians and statisticians to many symbolic and arithmetical feats

The examinations of medical students have not figured very prominently in this tournament but the medical profession has been longer and more sedulously examined than others Confining ourselves to England and Wales, we possess a lively account of an examination at Surgeons Hall of nearly two hundred years ago while the Royal College of Physicians has been steadily examining for about four hundred years Unfortunately the College of Physicians only examined orally and nobody is known to have made a note of the questions he was asked nor are statistics of results available although they may exist in a mutilated condition. We say mutilated because Munk recorded with proper indignation that the loss of certain eighteenth century records is believed to be due to the desire of an officer of the College to conceal the fact that *he* had once been ploughed

Interest in medical examinations quickened early in the nineteenth century and after the passing of the Medical Act of 1858 the examining of medical students became a staple industry The student had indeed a wide choice of examinations but examined frequently examined he must be, and, as the General Medical Council had a passion for statistics, statistics of examinations became available. These statistics played a part in the vigorous controversies of sixty to eighty years ago when the grievances of medical students in London were first widely ventilated

The literature of that controversy is now almost forgotten it included a contribution from a surgeon still remembered in his own medical school (the London Hospital) Walter Rivington (1835–97) but probably not even a name elsewhere Two editions of Rivington s book appeared the first in 1879 a volume of 477 pages to which the Royal College of Surgeons in Ireland awarded a prize of £200 In keeping with the tradition of prize essays this had a Latin motto—*Nil actum reputans si quid superesset agendum* The author took this motto to heart and so did the Royal College of Surgeons in Ireland for in 1888 another essay appeared and we infer another prize of £200 was awarded. The motto this time was in English—*Every man is a debtor to his Profession*—and the 477 pages had grown to 1200

Small Proportion of Medical Students taking London Degrees

The envy of modern statisticians contemplating a reward of four hundred pounds sterling for a statistical—or at least mainly statistical—study of the medical profession may prejudice equitable judgment So we will confine ourselves to remarking that the statistical matter is diffuse and the second essay as a piece of book making not very successful Perhaps the nine months which according to the preface were the period of gestation were insufficient for the full term birth of so large an animal But we add in justice to the memory of a stout fighter that the non statistical sections of the book are (even to statisticians) good reading

Rivington s attitude towards medical authorities fifty years ago was much like that of the founder of The Lancet a hundred years ago He had not Wakley's command of invective but could be trenchant and his comments upon the motives and actions of royal colleges and even universities have no more reverence than Low's cartoons These matters however, belong not to statistics but medical politics and do not come within our scope The statistical interest of Rivington s book is that he gave arithmetical demonstration of the fact that the proportion of medical students in London who achieved a university degree in medicine was small and that he discussed statistically the reason for this as he held it defect We propose to compare some of his data with those of more recent times and to consider critically the adequacy of the material.

WHICH EXAMINATION IS THE OBSTACLE ?

Rivington attributed the small output of medical graduates by the University of London itself not to the severity of that university's final *examination* but to the severity of the matriculation examination of the preliminary scientific (now more often called 1st M.B) and of the intermediate examination (2nd M B) He was a particularly severe critic of the preliminary scientific and matriculation examinations. Current opinion we think inclines to make the final examination the principal offender There are of course, very great difficulties of comparison Sixty years ago nobody was exempted from anything and chemistry physics and biology were not school subjects But even as recently as 1911 there was still a tendency to blame the initial rather than the final obstacles to a medical degree (see for example questions 13 446 et seq Minutes of Evidence, Royal Commission on University Education in London Cd. 6312 of 1912) The first question which arises is whether this impression is correct.

Methods of Statistical Approach

At this point it is material to inquire what is the correct *statistical* method of solving problems of this kind The answer is, of course, the method of what vital statisticians call a Life Table. We ought to follow the careers of each generation of students from the beginning of their medical education until all are launched on their careers or have sunk. In theory this is a perfectly simple operation One makes a list of entrants to a medical school in the year X and traces their careers for the next Y years Y being a number not less than say 7 We can then without any abstruse calculations determine how many broke down at each fence in the professional obstacle race.

Actually this very simple process has seldom or never been carried out on an adequate scale. One reason—apart from the psychological *fact that* a great majority of medical men *regard all* statistical operations with feelings of dislike and contempt—is that although the process is simple it is laborious and can only be executed by those having access to the data. Those having such access have not yet been convinced that the end would justify the means. Consequently most statistical inferences have been based upon data of a less adequate kind. Rivington used mainly the statistics of examination results. More recent authors have compared the annual quotas of medical graduates and licentiates. These data are regularly compiled and need no *ad hoc* grubbing in archives, and they clearly have *some* value; let us consider their limitations.

THE LIMITATIONS OF DEDUCTIONS FROM PUBLISHED DATA

First, as to examination statistics. For London University we have data of candidatures and passes from the beginning of the university. *If* no candidate were allowed to sit again for an examination at which he had failed (which is true of final honours schools in the ancient universities) such data would be sufficient. It is true that even then we could not prepare an absolutely correct survivorship table, because the interval between passing examination (*a*) and sitting for examination (*b*) would not be absolutely rigid. Still, if we knew that the average interval between candidatures was, say, two years, we should not be much in error in following this plan. If 100 candidates sat for (*a*) of whom 20 failed, and two years later 70 sat for (*b*) and 50 passed, it would be fair enough to say that of 100 starters, 50 reached the goal, 20 fell at the first hedge, 10 more left the course, and 20 fell at the last hedge. But actually for qualifying examinations an unsuccessful candidate may try again. Now we are perplexed. Simplify our case by assuming that everybody who passes the earlier examination *does* try to pass the second (a wholly erroneous assumption) and that the proportion of passes at the earlier examination is 80 per cent. and at the later 70 per cent.; then we might argue that of those entering for the first examination the proportion passing both would be 0·8 times 0·7 or 56 per cent., which would be correct had none dropped out. But suppose those failing at the first trial sit again? Evidently if the chance of failing were really constant, then, however large it might be, the probability of success would become with a sufficient number of trials as large as one pleases, in the sense that of a persistent group of candidates the proportion continuing to fail would dwindle. Say the chance of failing were three in four, then the chance of failing twice would be 0·5625, of failing three times 0·4219, and so on, and although our persistent sitter *might* never pass, the average proportion of those who sat at least 10 times and were always ploughed would be very small. Of course the objection is that the chance of success is not the same at each trial and few candidates will try their luck even as many as three times. Some restricted modern data we have seen suggest that for the London medical final the proportion of successes at the first trial is about 70 per cent., at second or later trials about half this, while of those who fail at the first trial only about two thirds sit again.

If then, as in the old data, we have *only* examination statistics, this is the difficulty. According to Rivington's data of 60 years ago the percentages of passes at the three professional examinations in the University, viz., the 1st M.B. (preliminary scientific), 2nd M.B., and Final were 50, 60, and 80. Is the product of the three, viz., 24 per cent., a fair measure of what we want, viz., the proportion of those who entered the race and passed the winning post?

On the one hand it is too harsh because it makes no allowance for second and subsequent candidatures, on the other too lenient for it makes no allowance for those who having passed one examination did not sit at all for a later one. It would be pleasant to believe that the two errors cancelled out, but statistically rash. A historical comparison would only be sound were some earnest seeker for a thesis subject to explore the archives (if preserved) and construct from the nominal rolls a correct survivorship table. Many degree theses have less interesting subjects. The University still prints data comparable in form with those Rivington used, but their real value is even less than it was. In Rivington's time, the University was adamant, it did not recognise the tests of other universities and, of course, there was no Higher School Certificate. Passes and failures for the 1st M.B. do not now account for all the medical starters, while passes and failures for separate *parts* of the later examinations are aggregated. Nothing can therefore be done with the modern figures along Rivington's lines. A short cut is suggested by the following statistical process. According to Table 6 of the last report of the University Grants Committee, in the academic year 1934–35, 202 students in London medical schools took degrees in medicine (including dentistry) and 976 took diplomas. Since the committee explicitly excluded medical degrees of Oxford and Cambridge (164 in number) the degrees must be mainly London degrees, we form the ratio of 202 to (976 + 202) and reach the proportion of 17·1 per cent. as that of London medical graduates, an even gloomier result than the conjectured 24 per cent. of 60 years ago. Actually the process, although it has been adopted in serious argument, is merely a statistical blunder. It would only give a correct result if (*a*) no person who took a medical diploma also took a medical degree, (*b*) entrants to the profession were sensibly constant from year to year, (*c*) only persons who were or might be candidates for London degrees could figure under the total of diplomates. None of these assumptions is correct although (*b*) is not *wildly* wrong. As to (*a*), according to recent data about 90 per cent. of London students also take a diploma, while as to (*c*) diplomates in London will necessarily include those diplomates who graduate in Oxford or Cambridge. The fallacy involved may be illustrated even without the help of the error due to (*c*). If of every 100 students who qualify 50 per cent. take a London degree and of these 90 per cent. also take a diploma, the annual quota (assuming (*b*)) of degrees and diplomas will be 50 degrees and 95 diplomas (the latter made up of 45 graduates who also took diplomas and 50 persons who took only diplomas). Using the incorrect method we should reach 50/145 as the proportion graduating or less than 35 per cent. instead of 50 per cent. The right answer is obtained by adding to the 95 diplomates the 5 non-diplomates and using that sum as the denominator, giving us 50/100.

There is, however, one suggestion in the table which is of interest and although not strictly relevant to the point under discussion has a bearing upon it. This is the relative increase in the graduations of Oxford and Cambridge. According to the figures quoted by Rivington (op. cit. p. 257) sixty years ago, in the quinquennium 1876–80, Oxford and Cambridge granted 92 bachelors' degrees in medicine, London 143, a ratio of 1 to 1·6; in 1934–35 the ratio was 1 to 1·3. As annual graduations, the Oxford and Cambridge figures have increased to nearly nine times the old figure, those of London to seven times the figure of sixty years ago. Some unpublished data we have seen *suggest* that in the London medical schools the proportion of undergraduates of the ancient universities under clinical instruction, is equal to or greater than that of the medical undergraduates of London University. In view of this fact it is, of course, only in a purely formal and administrative sense that the London clinical schools can be described as schools of London *University*; a large and apparently increasing proportion of the students in them are not primarily interested in the London University at all; they have another affiliation. This statistical fact is frequently overlooked

TABLE OF OXFORD AND CAMBRIDGE “WASTAGE”

Registered in—	1900–09								1910–33								Difference ±SE between 1900–09 and 1910–33			
	Oxford			Cambridge			Diff ±SE %	S or NS	Oxford			Cambridge			Diff ±SE %	S or NS	Oxford	S or NS	Cambridge	S or NS
	No	W	W %	No	W	W %			No	W	W %	No	W	W %						
London	9	1	3·1	103	10	11·7	8·3 ± 6·09	NS	139	12	8·0	483	120	24·8	16·2 ± 3·91	S	5·2 ± 6·5	NS	13·1 ± 3·51	S
Provinces	71	9	12	408	3	14·0	1·3 ± 4·13	NS	278	41	14	1131	418	37·0	22·3 ± 3·14	S	2·0 ± 4·06	NS	23·0 ± 2·67	S
London + Provinces	[illegible]	10	10·0	[illegible]	70	13·3	3·3 ± 3·62	NS	417	53	12·7	1614	538	33·3	20·6 ± 2·50	S	2·7 ± 3·64	NS	20·0 ± 2·19	S

Here the wastage (W) at Cambridge is always in excess of Oxford and the wastage in both universities is greater in 1910–33 Hence differences are all positive

OXFORD AND CAMBRIDGE GRADUATES REGISTERING BY VIRTUE OF DEGREE ONLY
(without obtaining diploma of the Conjoint Board)

Registered in—	1900–09								1910–33.								Difference ±SE between 1900–09 and 1910–33			
	Oxford			Cambridge			Diff ±SE	S or NS	Oxford			Cambridge			Diff ±SE %	S or NS	Oxford	S or NS	Cambridge	S or NS
	No	Without Conjoint	%	No	Without Conjoint	%			No	Without Conjoint	%	No	Without Conjoint	%						
London	28	14	50·0	141	[illegible]	32·6	17·4 ± 9·88	NS	127	48	37·8	363	43	11·8	20·0 ± 4·01	S	12·2 ± 10·22	NS	20·8 ± 3·76	S
Provinces	62	24	38·7	331	[illegible]	27·1	11·0 ± 6·24	NS	237	100	42·2	713	84	11·8	30·4 ± 2·96	S	3·5 ± 7·03	NS	15·3 ± 2·44	S
London + Provinces	90	38	42·2	[illegible]	[illegible]	28·7	13·5 ± 5·[illegible]9	S	364	148	40·7	1076	127	11·8	28·9 ± 2·38	S	1·5 ± 5·96	NS	16·9 ± 2·04	S

Here the percentage without Conjoint is always greater at Oxford At Oxford it is higher in the London section in 1900–09 than in 1910–33 but higher in the Provinces in 1910–33 than in 1900–09

Differences are to be regarded as significant (S) when they exceed twice their standard error (SE)

Estimation of Wastage from Unpublished Data

Returning to the purely arithmetical problem we conclude that *none* of the published data permit us to compute the present wastage rate Some unpublished data we have consulted do however throw light upon wastage between the intermediate and final hedge. These relate to a particular sample of London University students viz. the 425 who in the years 1926 and 1927 completed the second examination for medical degrees The names were traced to the year 1934—i.e long enough to make it probable that nearly all who would do so had qualified. Actually 26 (including two deaths) never did qualify Of the remaining 399 all qualified and 250 graduated in medicine in the University Of the 149 who did not graduate 63 sat for but failed in the M B B S examination (30 more than once) the remainder did not sit for the final examination at all.

If we define *wastage* as the proportion of eligible candidates who fail to graduate, then the wastage after the preclinical stage of London University students is about 37 per cent and more than half of this wastage is accounted for by students who did not even attempt to pass the University's final examination. It will be noticed that the wastage accounted for by failure in the final examination is only 16 per cent. and that of those who sat for the final nearly 80 per cent were successful. How do these results compare with those of 60 years ago? We have no means of knowing because Rivington did not obtain any data of the wastage due to failure *to sit* All we can say is that the wastage due to failure to pass of those who did sit is much the same as it was in Rivington's time and hardly suggests that the mere standard of severity of the final examination is draconian.

We have spoken of wastage wholly with reference to the final stage. So far as wastage at the earlier stage is concerned, we have no data of a similar character We have reason to believe however, that adequate statistics will shortly become available and do not propose to speculate But we have given attention to obtaining information respecting the fates of those students *in* London who seek the degrees of senior universities These students receive the same instruction as their London University contemporaries but sit for other graduating examinations How many of them succeed? Clearly the right answer can only be given by an analysis of official data to which we have no access. But there may be some interest in using information open to all the world viz that contained in the Medical Directory That of course, restricts us to the university students who at least succeeded in qualifying and to persons still living

These restrictions are not important. There is no reason to suppose that the death rate differentiates seriously between those who qualify by licence and those who graduate as well and to judge by the sample mentioned above a great majority of London University medical students reach the Medical

Register Whether our record of wastage is accurate is another question

We adopted the following plan

The Medical Directory of 1935 was used and the names of persons who registered between 1900 and 1933 were examined As medical graduates of Oxford or Cambridge were counted all those who recorded an M B or M D or a B C As wastage—in the purely statistical sense—we counted —

(1) All who entered Cambridge (or Oxford) as a place of study but took no medical degree of those universities

(2) All who recorded a B.A obtained within five years before the date of medical registration, unless it was specifically stated that the Arts degree was taken in a field wholly unrelated to medical study

Obviously there is some risk of error in both directions A man who did not take a degree at all and did not record Oxford or Cambridge as a place of medical study would not be included Some of our included B.A 's may have done no preclinical work at their universities We do not think these objections of much importance, because the great majority of those entries contributing to the *wastage data had recorded the university as a place of* study Only males are included in this analysis, the university regulations regarding women students having varied during this period, making their inclusion inadvisable

Statistical Evidence Obtained

The Table sets out the results obtained. For reasons which will appear we tabulate both wastage and the proportions of medical graduates who entered the Medical Register by virtue of their degrees only There is a large choice of licences to practise, but their separate tabulation would be wasteful of space , *the immense majority of the licences obtained* were diplomas of M R C S and L R C P

The first point to notice is that over the period 1910–33 the Cambridge wastage is nearly the same as that of the London sample for 1926–27 That showed 149 non graduates out of 399 For the Cambridge 1910–33 set we have 538 non graduating out of 1614 The arithmetical difference between the percentages is less than twice the standard error of the difference and might well arise as a freak of sampling It must, however, be noted that all in the London sample had completed the university preclinical stage Our method does not distinguish between those Oxford and Cambridge men who fell out before passing in anatomy and physiology and those who had only the clinical examination to complete We have no data to decide the importance of this Provisionally, we should hold that the strictly comparable London wastage would be rather greater than that of Cambridge It does, however, appear that the two wastage rates are of the same order of magnitude If, as has been asserted, the authorities of the London University are perturbed by their medical wastage presumably *a similar* anxiety haunts the dreams of the academically powerful in Cambridge

Another statistical point is noteworthy It has been suggested that London students, meaning London *University* students, have a peculiarly intimate relation to the Conjoint Examining Board in England So far as this may be measured by the frequency with which a university degree in medicine is combined with a licence (practically always taken before the degree) the suggestion is without foundation From the data referred to above it is calculated that for the years 1926–27 the number of London students who qualified by virtue of degree only was 14 4 per cent The comparative figures given in our Table are, for Oxford 40 7 per cent and for Cambridge 11 8 per cent There *is* thus a significant difference in this association between London and Oxford students, none between London and Cambridge students A corollary is that if it were desirable (we are not suggesting that it is desirable, that is not a statistical question) for London University to take counsel with the royal colleges, the same course might commend itself to the University of Cambridge

The most striking statistical result of all, is the present contrast between Oxford and Cambridge For the generation of 1900–09 there is no significant difference and the present day Oxford wastage does not differ significantly from that of a generation ago But the present day Cambridge wastage is much greater than that of Oxford and much greater than the past Cambridge wastage Statistically speaking, this is the safest part of the analysis, because the indices of wastage, whatever their defects, are fairly comparable as between past and present and as between one university and another It will also be seen that almost four times as large a proportion of Oxford men do not trouble the Conjoint Examining Board as of Cambridge men, and that the proportion of Cambridge examinees in Queen square is almost three times as great as of those on the Embankment The proportion of men who have not paid fees to the Conjoint Board has fallen

The Table shows other details, for instance, the difference between wastage of the London and provincial practitioners (or residents) but these do not call for extended notice We may, therefore, conclude our statistical analysis

A Theory to Account for the Wastage

To interpret the results not only requires more intimate knowledge than we have but would raise controversial issues which have no place here We cannot, however, resist sketching a theory, suggested by some informal conversation with persons of experience which does not, or at least we think does not, glance at matters of current controversy

The theory is that both London and Cambridge wastage is due to economic factors, but factors working in quite different directions It is not disputed that in point of time (whether in point of intellectual difficulty is disputed) a licence is easier to obtain than a medical degree of any of the three universities Therefore if the resources of a student or of his parents fail he may be economically forced to abandon hope of a degree This, it is suggested, is the predominant factor of the London University wastage Now Cambridge is still a much larger medical school than Oxford, the social prestige of membership of either of the ancient universities is great, and Cambridge is much more closely identified by the public with "science" than is Oxford. There may have grown up at Cambridge a class of medical students who, and whose parents, are content with such prestige as residence and graduation in the arts faculty confer and satisfied to base their right to practise upon a licence Wastage of this kind would not be due to economic stress but to an economic, or sociological, judgment that the general public does not really care much whether "the doctor" is a ' real" doctor or not but does care a good deal whether he is a Cambridge man or not The hypothesis is interesting, we shall not discuss it Perhaps we have said enough to show that the statistics of medical graduation might be a starting point of many curious inquiries

MEDICINE AND THE LAW

More Problems of Damages

On July 10th in noticing the decisions in Rose v Ford and Roach v Yates, comment was made upon the difficulty of assessing damages where by the defendant's negligence a healthy and athletic man has been turned into a permanent invalid or where a figure must be placed upon the diminished expectancy of life Further instances have since occurred. Dr D J C Mangan was killed in a motoring accident a year ago He was 32 years of age; he was unmarried he held a post on the staff of an institution for mental defectives How were the lost prospects of his career to be valued? According to Lord Atkin's judgment in Rose v Ford damages for diminished expectancy of life could be computed and ought to be computed. The Lord Chief Justice awarded £500 to Dr Mangan's mother (to whose support the dead man had contributed £130 a year) £57 for funeral expenses, and £2000 for the diminished expectation of Dr. Mangan's life This novel element of increased damages for shortened prospect of living is causing no little perturbation to insurance companies If the awards continue to increase the companies will doubtless find means of distributing part of the burden of the additional liability among the members of the public who insure themselves

There is likely to be an appeal over the figure of £2000 awarded in Dr Mangan's case. The Court of Appeal of course, can increase as well as reduce an award In Roach v Yates the damages were more than doubled on appeal. And last week in Coates v Rawtenstall Corporation an award of £1300 at Manchester assizes was increased to £3000 in the Court of Appeal. A child had been injured while sliding down a chute in a recreation ground a chain having been negligently left fastened across the lower end of the slide. The child broke his thigh and paralysis supervened. It would be foolish to suggest that awards of this kind could be standardised but, if Dr Mangan's case reaches the Court of Appeal it will be interesting to see what value the judges place upon the loss of professional prospects

Septicæmia or Agranulocytosis?

At an inquest in Manchester reported in the *Manchester Guardian* of July 15th, the death of a woman aged 59 was attributed by some witnesses to septicæmia and by others to agranulocytosis following the taking of doses of amidopyrine in tablets of Yeast Vite Her husband said that his wife's health had always been good She had taken Yeast-Vite occasionally since 1931 She took two tablets on each of the three days before June 6th. At the beginning of June she scratched her finger On June 5th, when she felt definitely ill, her doctor found that her temperature was 102 F There was a red swelling on the finger and he incised it. Next day he ordered her removal to the Royal Infirmary apparently telling the hospital authorities that he thought she was suffering from blood poisoning

The Manchester city analyst, called at the inquest expressed the view that the drugs amidopyrine and phenacetin contributed to the cause of death though in cross examination it was suggested that his opinion could scarcely outweigh that of a qualified medical practitioner who after seeing the patient, had diagnosed septicæmia Dr David Lloyd Griffiths who also gave evidence considered that death was accelerated by the Yeast-Vite The inquest was adjourned in order to enable the manufacturers to be represented

The retailer who had sold the tablets to the deceased said that he had never received any notice from the manufacturers to the effect that a new formula had been substituted or that there were any restrictions on the sale of the patent medicine He was the manager of the local branch of the Coöperative Society Another witness said that a notice calling in all Yeast-Vite stocks was contained in the weekly price list sent to all branches of the society in May 1936 For the manufacturers it was stated that for many years Yeast-Vite had been sold at the rate of 80 000 000 tablets a year and it had never been suggested that anybody was any the worse for taking them There was one case only that of a young woman in 1935 who died it was said as the result of sepsis of the teeth Amidopyrine was omitted from the tablets after that date The medical evidence was conflicting On the one side Dr Griffiths attributed death to agranulocytosis caused by the doses of amidopyrine and not to septicæmia He was convinced that death was not due to septicæmia because bacteriological examination of the patient's blood did not reveal any micro-organism On the other side Sir William Willcox was equally positive that death must be due to septicæmia caused by the wound in the finger and could not be due to amidopyrine He had, he said prescribed the drug thousands of times He thought it absolutely inconceivable that two doses of 4½ grains of amidopyrine taken on June 3rd and June 4th, could have caused those dramatically acute symptoms with this dose taken only two days consecutively it was impossible that agranulocytosis could have resulted He ruled out the suggestion of idiosyncrasy The patient had been taking the drug for years had there been any special susceptibility it would have shown itself some time before

The coroner told the jury that there were three possible verdicts Death could be found due to septicæmia or to agranulocytosis or to a toxic condition of which there was insufficient evidence to indicate the cause The jury returned an open verdict choosing the third course

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

GROUP HEALTH ASSOCIATION

Semi official blessing on health insurance is implied in the announcement that a Group Health Association is being established in Washington D C for the employees of two federal agencies—viz. the Home Owners Loan Corporation and the Federal Home Loan Bank Board. Some 2000 employees are said to have enrolled already at a semi monthly rate of $1 10 per person or $1 65 per family regardless of the size of the family A total revenue from subscriptions of $60 000 is anticipated This is to be supplemented by grants from the federal agencies in the belief that the scheme will promote efficiency and lessen absence on account of sickness

Subscribers will be entitled to medical care by Dr William Rolfe Brown former chief of the tuberculosis division of the Veterans Administration and a corps of assistants also to special examinations and to hospital care. For the latter the association is contracting under the existing Washington hospital insurance plan described in the American Foundation's American Medicine as follows —

> We have now about 27 000 subscribers in the Group Hospitalisation Inc in Washington To take a recent period as an example the organisation paid the hospitals

from January 1st to June 30th, 1936, over $50,000 for hospitalisation This would indicate that our plan is certainly of value to the hospitals We also know now that our average stay in the hospital is about eight days, but the organisation has been able to set up adequate reserves to protect the subscribers for the full period of 21 days if necessary, and even to absorb three or four times the expectancy in case an epidemic or catastrophe or contingency of any sort required it "

Group health insurance through commercial insurance companies has already been established in this country , for example, the 7000 employees of the firm of McKesson and Robins, drug manufacturers, of Fairfield, Connecticut, are covered by a $12,000,000 group insurance policy that provides life, accident, and sickness benefits to the insured employees But the foundation of the Group Health Association is, so far as I know, the first venture of government into the field of health insurance in this country

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

EXTENDING THE CURRICULUM

IN his address as promoter at a graduation ceremony in the University of Edinburgh last week, Prof Sydney Smith, dean of the faculty of medicine, referred to proposals for extending the course of study The curriculum, he said, had been the target for much criticism, but this was to be expected of a course of study that was always advancing It had been said that the education of medical students was entirely vocational and devoid of cultural value This was but a phase of the age long battle between science and the humanities in which the latter, knowing little, feared much , whereas a little understanding would remove all cause for antagonism It was doubtful if the study of the classics, or of anything else, could do more than foster an appreciation of truth There could be no doubt that the study of medicine offered as ample a field for thought as any other The whole of the recent advances in medicine and cognate sciences has had to be incorporated into the curriculum of study without adding to the time taken in the process Prof Sydney Smith said that the senatus are now deliberating the advisability of extending the course of study to five full years after the study of the fundamental sciences—that is to say, five years from the beginning of anatomy and physiology They are also considering the desirability of keeping students at school until they are eighteen years of age After acquiring the standard of proficiency of the Leaving Certificate, the student would continue at school for a further period of about a year, during which the sciences would be treated as special subjects, associated with one or more subjects of general education He would then pass to the University, prepared to undertake the study of biology and enter the medical curriculum proper Among the many other changes under consideration, Prof Sydney Smith said that they hoped to increase greatly the amount of clinical work, and through the close association with the municipal hospitals arrangements will be made to give all the students a period of living in at hospital. It is hoped also to extend the dispensary system which is a unique feature of the Edinburgh School "A considerable amount of money is required to give effect to our programme, but we have every confidence that when our needs are known it will be forthcoming About half a million pounds would enable us to do all we want to do in the immediate future " The preventive side of medicine had not been neglected either in teaching or in research in the past, but in the future the aim must be more and more to stress its importance

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdrs E B Pollard to *Pembroke* for R N B , Chatham , and W E Heath to *Victory* for R N B , Portsmouth

Surg Lt Comdrs C H Birt to *Victory* for R N B Portsmouth , and E E Malone to *Pembroke* for R N B , Chatham

Surg Lts W S Miller to *Victory* for R N B , Portsmouth , J F Meynell to *Peterel* , W S Parker to *Penzance* and W B Teasey to *York*

The following have been appointed Admiralty Surgeons and Agents Mr S M Lawrence, Buckingham , Mr F T Hill, Caterham , Mr S E Kilner, Bury St Edmunds , Mr F McVean, Castle Cary , Mr W T Briscoe, Chippenham , and Surg Lt Comdr D W Bawtree, R N V R , Tunbridge Wells

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt Comdrs R B Roberts to *Resolution* and J A Kerr and J L Cox to *Victory*

Surg Lt Comdr (D) A C Bloomer to *Victory*

Surg Lts R D Jenkins to *Drake* , and C P Nicholas and J N Matthews to *Pembroke*

Surg Sub Lts J B W Hayward and W H Osborne promoted to Surg Lts

Proby Surg Lt R M Littledale to be Surg Lt

ARMY MEDICAL SERVICES

Sir Harold Gillies, C B E , F R C S , has been appointed Honorary Consulting Surgeon in Plastic Surgery to the Queen Alexandra Military Hospital, Millbank, London

ROYAL ARMY MEDICAL CORPS

The name of Maj H Alcock has been brought to notice in recognition of distinguished services rendered in Palestine, April–Oct , 1936 (See also under Royal Air Force for further names)

TERRITORIAL ARMY

Capt E G Oastler to be Maj

Lts W G Garrow, from 9th Bn H L I , and S Gifford to be Capts

To be Lts M S Holman (late Offr Cadet, Univ of Lond Contgt (Med Unit), Sen Div , O T C), J M Dewar (late Offr Cadet, St Andrews Univ Contgt , Sen Div , O T C), J MacM Macfie (late Cadet Corpl , Edinburgh Academy Contgt , Jun Div , O T C), J C Buckley (late Cadet Serjt , Eastbourne Coll Contgt , Jun Div , O T C), N G Clements , and A. Chambers

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt W R Nash, from Active List, to be Capt

ROYAL AIR FORCE

The names of the following have been brought to notice by the Air Officer formerly Commanding and the General Officer Commanding the British Forces in Palestine and Trans-Jordan in recognition of distinguished services rendered in Palestine, April–Oct , 1936 Group Capt K Biggs, M C , Squadron Leader (now Wing Comdr) G P O Connell , Squadron Leader G E Church , and Flight Lt C A Rumball

Squadron Leaders F D Barling to No 3 Flying Training School Grantham, for duty as Medical Officer , and H Penman to Princess Mary's R.A.F. Hospital, Halton, for duty as Medical Officer

Flight Lts T D L Bolan to R.A F Station, Feltwell J F Dales to R A F Station, Finningley and D J Sheehan to Central Medical Establishment, London

Dental Branch —Flight Lt A Maben to R A.F Station, Cardington Flying Offr B Blackburne to No 1 School of Technical Training (Apprentices), Halton

RESERVE OF AIR FORCE OFFICERS

Flight Lt J Twohill relinquishes his commission on completion of service and is permitted to retain his rank

AUXILIARY AIR FORCE

Flying Offr I A. G L. Dick is promoted to the rank of Flight Lt

INDIAN MEDICAL SERVICE

Capt P Papatla relinquishes his temp commn.

Indian Medical Department —Sub-Maj and Hon. Lt Rai Sahib Ram Ditta Mal, Bahadur O B I to be Hon. Capt

DEATHS IN THE SERVICES

Lt. Col ERNEST GEORGE FRENCH R.A.M.C rotd who died on July 25th in his sixty first year was educated at Edinburgh and St Bartholomew's Hospital, London, qualifying M.B in 1898 M.D in 1906 and F.R C.S Edin in 1909 Entering the R.A.M C in 1901 he served in the South African War taking part in the action at Rhenoster Kop and gaining the Queen's medal with five clasps Later in the European War he received the King's medal and was twice mentioned in dispatches He had been chief assistant in the Skin Department at St Bart's and was put in command of the Military Hospital Rochester row with rank as specialist in dermatology of the British Army He was the author of a work on the modern treatment of syphilis (1920) He married Adèle M. Carvalho who survives him

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GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM A READER

V

CONTEMPLATION of my steamer's wake across the North Sea has increased my admiration of the superb aeronautics of the gull. I watched several of them riding with outstretched wings on the eddies of air about the stern and saw one achieve a record of twelve minutes' suspension without a flap of the wings. Like most amateurish bird watchers I am deplorably sentimental and a more intimate examination of the birds in a small Swedish archipelago recalled all the unpleasantries of these stinking flesh eaters. The greater black backed gull is a cunning bully a sort of Bulldog Drummond of the fiord, with a peculiarly repulsive expression of a young woman who trying to imitate the patrician hauteur of the ladies drawn in current fashion journals, succeeds only in looking snooty and rapacious. I have just seen a gull as tame as such a bird could be When barely fully grown *the story goes it accepted* a piece of fish from an old sailor and every day since for twenty years it has returned to feed from him It was fat and ugly and the only signs of attachment it had for its benefactor were to take fish from his hand alone and to waddle after him pecking viciously at his trouser legs if no food was forthcoming After feeding it flew heavily away with barely enough lift to clear the water Apart from the constancy of its cupboard love, its chief claim to fame was that many years ago it found a barrel of herrings left open and put down twenty pounds at a sitting.

* * *

The complacently monolingual Britisher is a bit of myth, but I doubt if he will ever die There is a similar belief that all Russians are superb linguists. Turgenev attempted to explode it but it is still invoked with satisfaction when we find that a voluble polyglot is a Russian. Necessity is the *only* teacher of languages for most of us and on the whole English people make a fair showing with foreign languages (Let me hasten to add, throwing a sop to another belief that they speak them with a vile accent quite unlike, one must suppose the exquisitely modulated Oxford accent of the visiting German or Frenchman) In a Scandinavian country to whose language necessity hasn't driven me except for a few numerals and food words, I am distressingly dependent on gesture and the superior education of my hosts But grateful as I feel for the excellent teaching of English in Swedish secondary schools English with a marked Swedish accent is nearly as incomprehensible as Swedish itself

In accent lies one of the prime difficulties of a universal language. Whether it is dog Latin basic English or Esperanto it will sound fluid and vowelly on the lips of an Italian and the Dane for example will make it characteristically nasal and staccato Only by writing the language in the several national phonetics would the spoken word be universal perhaps it is better to stick to the universal written language, and let speech look after itself. When in doubt we can always translate the peculiarities of the foreigner's Esperanto or basic English. After all we have the celebrated precedent of Shakespeare's

O weederdee degar lano devar

with which the *Times* conveyed the niceties of a foreign actress's rendering of

O wither'd is the garland of the war

* * *

Sweden is said to be the most civilised country in the world. I should hesitate to endorse this remark for I don't know what civilisation is For one person, such praise is deserved when he finds electric light in remote villages and sanitation dependent on running water Reasonable divorce laws, a fair degree of intelligent socialisation and a proper attitude to the League of Nations might be grounds for another's endorsement And there is even the unjustly celebrated medical definition of civilisation as syphilisation to consider—but that is more noteworthy as a sniggering near pun than anything else But without *bothering about definition* I am content to find Sweden exceptionally attractive, full of savoir vivre and modern conveniences

* * *

As holiday reading the detective story remains the most popular The bland assumption of reviewers in the higher toned weeklies that its popularity depends on the vicarious satisfaction of blood lust is puzzling I'm certainly not conscious of it nor are any of the readers I've asked about it if such subjective observation can be accepted as evidence about a thing like blood lust One satisfaction can be found in all stories of detection—that of the scientific instinct The reader is stimulated to investigate something and has the vicarious pleasure of tidying up a mysterious phenomenon. The almost constant use of murder as a theme is accidental for really big thefts, of jewels or war office secrets can be equally *fascinating* The real point about the ubiquity of crime in the stories is that it takes thieves and killers with their threat to really important things like property and life, to rouse us to the point of intellectual activity As for blood lust it can be so much more easily satisfied every morning for the expenditure of one penny

Detective story writers are of two kinds setters and solvers of a puzzle, and novelists who lard more or less good detection with character, irrelevant information, and love interest It would be interesting to know whether doctors, whose existence is made up of a series of detective problems, like their detection plain or fancy I should imagine that practitioners like it plain, for they must be tired of adjusting their detection to the all too human interests while medical workers more remote from patients probably like it fancy, for they are sick of mere fact I manage both kinds, though I prefer the fancy I like to learn with Miss Sayers the right poets to quote for refined love making, the right way to refer to that paragon of the peerage, Lord Peter Wimsey, to know that a detailed knowledge of Taylor's Jurisprudence is compatible with a tense Oxonian reverence for Scarlatti and Bach But these paragons must wear their learning with an air The angular erudition of Philo Vance is too much for flesh to bear, and even the urbane Ellery Queen goes too far when the editor appends to one of his learned remarks a footnote to the effect that "Queen is evidently referring to Schopenhauer's dictum that   " If our policemen are to be learned, let them at least be light

* * *

Looking over my grains and scruples, I am struck by the way in which they have insensibly piled up until the pages are laden with avoirdupois of portentous solidity It takes a long familiarity with journalism to believe that a light thought, without cosmic significance or roots deep in experience, is really worth printing Both I and my predecessors in these columns have yielded to that acquired lust for diagnosis, the desire to explain and relegate all things to a general scheme The influence of Sir Thomas Browne, with his orotund pontifications, has been too much for us, and though we have'nt attempted a Religio Medici, there is a whiff of incense pervading even our lightest moments

As a self designated Reader, my preoccupation in these columns has been with writers, which is no bad thing in itself, for experience is most conveniently handed on in print But the literary gents have come to regard the art of conveying experience as the most important part of living, and have made Literature synonymous with Life, the writer's life and work are one, and the heritage of Great Thoughts has become the gallery of Great Men This is all very well for the literary gents, but it can be rather tiresome for the rest of us, because criticism and understanding are expected to be as much concerned with men as with their "message" It is no longer enough for us to read intelligently, we must be erudite as well, with a background of great poets, novelists, and critics, we must be familiar with a host of illustrious persons—believing this with Francis Bacon, and that with Emily Brontë—and live in a select family of what Mr Aldous Huxley calls culture uncles and culture aunts To be well read is an end in itself, and bookishness has become a game, well seasoned with intellectual snobbery The proper attitude to it all would be "I don't know about Art and all that, but I know what I like," if this were not the expression of the most intense intellectual snobbery of all, the credo of the Plain Man with No Nonsense about him

Apparently there is no escape To be educated one must suffer the taint of Culture But I must protest against it, and, bookish to the end, I cannot do better than quote culture uncle Bernard Shaw It was in Cashel Byron that Lydia Carew, tired of her arty crafty, overcultured acquaintances, sighed, "If one could only find an educated man who had never read a book, what a delightful companion he would be"

⁂ *This concludes the five articles by a Reader Next month F R C S (1936) will be responsible for these columns* —ED L

PANEL AND CONTRACT PRACTICE

A Sunday Sore Throat

ON a certain Sunday, about 10 A M, a domestic servant told her employer that she had a sore throat and was sent to bed Some three hours later the employer telephoned to the responsible insurance practitioner asking him to visit the patient The doctor was somewhat annoyed at being called out on Sunday and suggested that the girl should be sent to him if she required his services Later in the day he sent notes to the insured person and to the mistress, in the former requesting the maid forthwith to choose another doctor and in the latter making observations about the unreasonable attitude adopted by the mistresses of some domestic servants

The girl, in her evidence before the medical service subcommittee, when asked whether she felt ill apart from having a sore throat replied, "No, not exactly ill, but it certainly did make me feel queer" Another practitioner visited her on the Sunday evening and he gave her an injection and some tablets

The mistress said that she was concerned because the girl was delicate, had recently undergone a nasal operation, and had been advised to exercise care in the event of a cold being contracted The maid had told her that her temperature which was usually subnormal, had risen to normal and the mistress seems to have regarded this as indicating feverishness She waited until about 1 P M before telephoning because she assumed that the doctor would be out during the morning She said that she told the doctor that the girl had an extremely sore throat and had been sent to bed, and when the doctor inquired as to the girl's temperature she replied that it was normal The doctor then suggested that the girl should come to his house, but she would not take the responsibility of allowing her to go out as she was thoroughly warm in bed She agreed that had she not already sent the girl to bed she would have sent her to the doctor She was not aware that in this particular insurance committee's area it was only in case of emergency that an insurance doctor should be called on a Sunday The services of the other doctor were not sought until after the notes had been received from the responsible doctor

The practitioner told the subcommittee that the telephone call came while he was having his lunch He was informed that the maid had a sore throat, and that her temperature, usually below normal, was that morning right up to normal He was not informed that the patient had been under a throat and ear specialist, and he did not remember being told that the girl had been in bed since 10 A M He thought, in all the circumstances the patient could come round to him particularly as he knew the employers possessed a motor car He told the mistress that a doctor should not be called on a Sunday unless in a case of serious emergency and had the information given to him suggested the existence of emergency he would have attended immediately, he felt indignant at being asked on a Sunday to visit a patient who had a normal temperature He telephoned the mistress a few minutes later with the object of reading to her the instructions printed on a medical card, and having understood that another doctor was going to be called in he subse quently sent the notes so as to save any further unpleasantness He was not then aware that if he wished the name of a patient to be removed from his list it was necessary that he should give notice to the insurance committee

The subcommittee formed the opinion that the insured person was not seriously ill on the Sunday morning but it was clear that it was not unreasonable of the mistress having regard to the circumstances of which she was aware and the further fact that she had sent the patient to bed some three hours previously, to decline to accept the responsibility of sending the girl to the doctor While the mistress claimed that she had informed the doctor that the girl had been sent to bed he denied any knowledge of the fact The subcommittee accepted the evidence of the mistress and thought that the failure of the practitioner to apprehend the fact was due to the manner in which he dealt with the telephone message The committee found that he committed a breach of the terms of service and called upon him to accept responsibility for the expense necessarily incurred in obtaining the services of another doctor

An Unfortunate Medical Service Case

The London medical service subcommittee has had so little to do lately that a case referred to in their last report stands out in contrast A woman, suffering from tuberculosis, discharged herself from hospital just before Christmas so as to be home with her husband and child. Although monthly certificates of incapacity were issued by her insurance practitioner in December and January he did not see the patient nor provide her with any treatment Towards the end of February the husband went for another certificate which the practitioner declined to issue without seeing the patient but although some altercation ensued he did not go to see her No visit was made until April 6th, and then only after a telephoned request from the insurance committee which had informed the doctor of the husband's complaint against him on March 20th. To make matters worse the practitioner after the complaint had been lodged gave the woman £2 and there were allegations of other actions on his part apparently taken in the hope of persuading the patient and her husband not to pursue the complaint. The report of the subcommittee had to include a reference to these allegations, but their recommendations which were adopted by the committee, related only to the breaches of the terms of service which had been established, and were to the effect that the practitioner should be censured severely and that the Minister should be asked to withhold the sum of £25 The subcommittee felt that the other allegations did not fall within their order of reference, but the committee decided to call the attention of the Minister to the allegations made with a view to his taking such action as he might deem necessary

PUBLIC HEALTH

No Place for an Epileptic Boy

A GOOD deal of publicity has been given to a case that came before one of the London juvenile courts recently A boy of 12 had been sent home after a considerable stay at a residential school for epileptics He soon got into trouble with the police. He stayed out late he stole he would not go to school. At a remand home his misconduct was attributed to his epilepsy and return to an epileptic school advised. But no school would take him The court could not commit him to an approved school because the London County Council refused to sanction his committal on the ground that the Home Office quite rightly in the opinion of the chairman of the court, objected to epileptics associating with normal children in these schools. So the boy was sent back to his parents under the supervision of a probation officer a form of treatment which the chairman of the court rightly characterised as hopeless and the parents were told to make the best of a desperate situation.

That something is very wrong here is clear The residential schools for epileptics were right in refusing to take the boy It is not fair on the other boys to retain one who leads others astray and undermines the discipline of the school The regulations of the Board of Education expressly state that children who cannot be educated without serious detriment to others must be excluded. Our information is that schools and colonies for epileptics are being increasingly used as a depository for difficult and delinquent patients who are referred from courts remand homes, or approved schools. The colonies were never intended for these cases and their presence is often seriously prejudicial to the other patients.

It is to the Home Office that we should look for a remedy Persistently delinquent children and adolescents are a Home Office responsibility and it is reasonable to suggest that epileptic delinquents should be admitted to one of the existing approved schools or if grave exception is taken to the association of epileptics with others that a special approved school should be set aside for them.

The epileptic is too often an unwanted member of society: the delinquent epileptic is so unwanted that no place can be found for him anywhere But a place must be found if deplorable incidents like this are to be avoided

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 17TH, 1937

Notifications—The following cases of infectious disease were notified during the week Small pox 0 scarlet fever 1605; diphtheria 970; enteric fever 45; pneumonia (primary or influenzal) 510 puerperal fever 32; puerperal pyrexia 132; cerebrospinal fever 22, acute poliomyelitis 8; acute polio-encephalitis, 1 encephalitis lethargica 2; dysentery 21 ophthalmia neonatorum, 104 No case of cholera plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on July 23rd was 3093 which included: Scarlet fever 763 diphtheria, 824 measles 165 whooping-cough 500 puerperal fever 17 mothers (plus 11 babies) encephalitis lethargica, 28* poliomyelitis 8 At St. Margaret's Hospital there were 25 babies (plus 14 mothers) with ophthalmia neonatorum

Deaths—In 124 great towns including London, there was no death from small pox 3 (0) from enteric fever 15 (0) from measles 3 (1) from scarlet fever 13 (4) from whooping-cough, 17 (1) from diphtheria, 80 (12) from diarrhœa and enteritis under two years and 10 (4) from influenza The figures in parentheses are those for London itself

There were 3 deaths from measles at Sunderland, 2 each at Newcastle-upon Tyne Birmingham and Nottingham Birmingham had 5 deaths from diarrhœa and Leeds 4 no other great town more than 2 Portsmouth Huddersfield and St Helens each had one death from enteric fever

The number of stillbirths notified during the week was 203 (corresponding to a rate of 41 per 1000 total births) including 41 in London.

CORRESPONDENCE

DIABETIC KETOSIS AND SUCCINIC ACID

To the Editor of THE LANCET

SIR,—Your leading article last week (p 200) has brought into prominence a new treatment with succinic acid suggested by Prof Szent Györgyi for diabetic ketosis His claims are of far reaching importance to thousands of diabetics and suggest that insulin injections may be replaced by succinic (amber) acid by mouth Before the publication of his scientific paper in July, the British lay press had already mentioned the new treatment and I have been pestered by patients wanting to try it and give up insulin. Admittedly the diabetic case records of the trials made by his clinical colleague, Dr Korányi, read convincingly and I feel that your leading article will raise, among doctors and their patients in this country, hopes which I think are premature I have obtained with my colleagues such *entirely negative* results in two cases that I am publishing them at once and they are now in the press Our trial was undertaken in June at the request of Prof Szent Györgyi through the Medical Research Council and the results may be summarised as follows

Two middle aged diabetic women were admitted to King's College Hospital, put to bed and kept throughout the experiment on a constant diet of 100 g C, 75 g P, 150 g fat Previous diet treatment had failed to control their diabetes and a heavy ketonuria, as well as hyperglycæmia and glycosuria, were constantly present After three days to ensure metabolic stability, succinic acid was given in the largest suggested doses, 10 grammes per mouth, for a week, which is longer than Dr Korányi found necessary to abolish ketosis in his four cases During that week the ketosis became *progressively worse* in both cases but quickly disappeared with subsequent insulin treatment My colleagues and I were convinced that our trial was fair and our results definite and so far we have undertaken no more cases

Now *four* successful cases from one clinic and *two* failures from another *prove* nothing, both publications being in my opinion premature But our failures show clearly that it is too soon to advise the treatment of severe diabetic ketosis with succinic acid alone, for without insulin our cases would have drifted into coma It may be that succinic acid acts in some cases only, whereas insulin acts in all *Until more numerous investigations have been made,* I should like to warn your readers and their patients *against undue optimism*

I am, Sir, yours faithfully,
R D LAWRENCE

The Diabetic Clinic King's College Hospital July 26th

LONDON FEVER HOSPITAL

To the Editor of THE LANCET

SIR,—Medical practitioners who know and use the London Fever Hospital will welcome a recent decision of the committee of management to extend the isolation accommodation A contract has been signed for the erection of a new three storied building providing single rooms on two floors, with an operating theatre, and small wards for children above The architects are Sir Aston Webb and Son, and the design carries out in their entirety the recommendations of the medical committee There are balconies to all floors, running completely round the building, and all nursing and service will be from the open air without internal corridors of any sort An appeal will be launched in the autumn and we shall be grateful for all the help we can get We hope, too, that all who are interested will see the new building in due course, and in the meantime we commend the service of this hospital to our colleagues in the Greater London area Private rooms are available for paying patients, and a high standard of nursing and maintenance can be relied upon

This was the first and it remains the only voluntary fever hospital. Its growth and endurance through 135 years of service and its importance in medical history give the hospital an honoured place in the voluntary system

We are, Sir, yours faithfully,
CHARLES R BOX,
JOHN F H BROADBENT,
WILLIAM H WILLCOX,
C E LAKIN,
C W GORDON BRYAN,
D F A. NEILSON,
THOMAS HUNT,
K SHIRLEY SMITH

July 21st

PROPHYLACTIC TREATMENT IN OBSTETRICS BY MEANS OF PRONTOSIL AND SULPHANILAMIDE

To the Editor of THE LANCET

SIR,—In your issue of July 10th you publish an abstract of a paper communicated to the North of England Obstetrical and Gynæcological Society by Mr Bryan Williams on the administration of *p* amino benzenesulphonamide (sulphanilamide) to a group of "obstetrical interference" cases in the hope of avoiding septic infection. From reports that have reached me from several other sources I gather that a similar preventive policy is being adopted rather commonly both in private and hospital practice

Since the paper published in THE LANCET of Dec 5th, 1936, by myself with Dr Méave Kenny and the honorary staff of Queen Charlotte's is perhaps partly responsible for this new departure—and since there would seem to be some misunderstanding about it—may I offer the following observations and suggestions?

The experiments with mice which led me to hope that these drugs might have some prophylactic value were briefly as follows —

> The drug was given by stomach tube 4 to 6 hours before the infecting dose of hæmolytic streptococci was injected into the peritoneal cavity, and was repeated a few hours after that event and subsequently once daily for two or three days All the 24 animals treated with sulphanilamide remained well, of the 6 treated with red prontosil 2 died late (8–10 days), and the others remained well, while of the 15 treated with Proseptasine (Messrs May and Baker) 11 remained well and 4 died between the 7th and 13th days All the 11 control mice died within 48 hours

Other tests of this kind, in which the spacing of the drug doses was rather different, showed that in order to protect the animals it was essential for an effective dose of the drug to have been given *within a few hours* (not more than six) before the animals were infected—and for a series of doses to follow that event

These conditions might well be fulfilled in obstetrics, since the probable time of infection—during or shortly after labour—is known. It therefore seemed to me reasonable—if prophylaxis in *obstetrics is to be attempted—to start it* some hours before the probable time of delivery—repeat the dose at 6 hourly intervals until the placenta is expelled, and thereafter at 8 or

12 hourly intervals for 3 or 4 days (There is no indication from our animal experiments that a course of treatment *before labour starts* would increase the margin of safety: the important thing is that a dose shall be given if possible within a few hours before, and certainly within a few hours after, the probable time of infection.)

This plan is admittedly based only on hope We can certainly prevent infection in mice so treated but it does not necessarily follow that we shall succeed with man—and it may prove an exceedingly difficult matter to decide this point I referred to the "effective dose for mice That was in the case of sulphanilamide about 5 mg for a 20 gramme mouse repeated a number of times A comparable dose in relation to body weight for an adult woman weighing say 60 kilogrammes would be about 15 grammes—a formidable amount to give to a woman whose metabolism is already bearing the strain of a full term pregnancy

But happily there is good reason to doubt whether the ratio between effective dose and body weight is the same for mouse and man Our experience of these drugs in the treatment of established infections strongly suggests that the effective dose for man in relation to body weight is considerably smaller than for the infected mouse. Certainly one can augment the streptococcus killing power of the mother's blood quite handsomely by 1 gramme doses of sulphanilamide t d.s (and sometimes by half that amount) as has been shown repeatedly by my colleague, Dr E D Hoare in this laboratory in tests carried out on normal parturient women During three days of treatment by this drug a small drop of blood (0 15 c.cm) was usually able to destroy completely several thousands of virulent hæmolytic streptococci, whereas before the drug was given it failed to kill the smallest test dose (10 to 40) of the same cocci.

These observations, together with the mouse protection tests described above, afford definite ground for hoping that we may—in many cases at least—be able to head off an infection by the hæmolytic streptococcus if that microbe should happen to reach the birth canal during or after labour (An observation recorded in Dr Kenny's paper in your issue of July 17th gives warning however that such prophylaxis may sometimes fail.)

In what circumstances should it be attempted? The answer to that question demands some previous consideration of possible risks for the mother and the child. While it is now clear that sulphanilamide and prontosil are on the whole of very low toxicity for most human beings it certainly cannot be said that their use is completely free from undesirable effects or even danger In particular it is now manifest that they exert an undesirable effect in many people upon the all important oxygen carrying capacity of the blood, an effect which may perhaps be increased by an anæsthetic causing cyanosis, such as nitrous oxide Moreover it is not unlikely that certain individuals have an idiosyncratic susceptibility to the toxic action of these compounds. In a few instances they have even been credited with a fatal effect[1]

I am far from wishing to overweight these considerations or to deter medical men from employing this new weapon in appropriate circumstances, but I feel that many will share my regret that it should be used indiscriminately for preventive purposes without any realisation of possible harmful effects (and also be it said for curative purposes in infections which we have no reason to expect will be influenced by it) Surely the statement that this or that remedy can at any rate do no harm is unworthy of twentieth century medicine—and yet—how much of our practice has no better basis.

As I understand it either red prontosil or sulphanilamide is now being used prophylactically in the following circumstances —

(a) For quite normal childbirth—because the doctor or the patient or both realise that there is a certain small risk of sepsis in every confinement

(b) For deliveries involving interference "—i e operative delivery internal version, manual removal of placenta, &c —because the risk of sepsis is known to be greater in such cases.

(c) For childbirth associated with suspected or known risk of *infection by the hæmolytic streptococcus*

It seems to me that in the present state of our knowledge (and ignorance) such prophylactic treatment in class (a) is hardly justifiable. The risk of sepsis due to the hæmolytic streptococcus (the only kind which we have any reason to expect may be controlled by these drugs) is small varying from 1 in 2000 to 1 in 50 according to the circumstances of the confinement on the other hand the risk of toxic effects of the drugs even in non pregnant adults, is quite appreciable and may prove to be more serious as our experience increases and there is perhaps the further risk that reliance upon some prophylactic charm of this sort might bring in its train a relaxation of vigilance in the application of aseptic and antiseptic technique That might well prove disastrous in the long run.

Prophylactic treatment in class (b)—the interference cases—is perhaps more justifiable if there is any evidence that the incidence of *hæmolytic streptococcus infection* in such cases is greater than among normal deliveries. I do not know of any such evidence—and it has been pointed out to me by obstetricians that because a strict aseptic and antiseptic toilet is more likely to be rigidly adhered to in conducting difficult deliveries of this kind they are somewhat less likely than normal cases to acquire a hæmolytic streptococcus infection

I would suggest that if prevention by drugs is attempted in such interference cases it would be well to ascertain whether or no a hæmolytic streptococcus is present in the birth canal after labour and if it is not, to discontinue the drug as soon as possible. For this purpose a swab taken 6 to 12 hours after the expulsion of the placenta should be bacteriologically examined. It will nearly always be possible to say if this is completely negative after 20 hours incubation

There remain the cases (class (c)) in which there is a known or suspected risk of infection by hæmolytic streptococci. For these I feel there is a very strong case for attempting prophylaxis and I personally should reserve it for such cases at present May I quote a few examples of the cases I have in mind?

(1) In a maternity hospital two or three women recently confined develop a high temperature within a few days. Other women recently delivered and especially those still awaiting delivery should be at once treated by one gramme doses of sulphanilamide t d.s pending the report of the bacteriologist on the swabs of the febrile cases

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[1] Since the above was written I have received a personal communication from Dr Perrin Long of the John Hopkins Hospital Baltimore telling me of several cases in which an "acute hæmolytic anæmia" developed within a few days of the commencement of treatment by sulphanilamide, and of two cases of agranulocytic angina associated with its prolonged administration (three weeks) These observations with the records of two cases of agranulocytosis recently reported in English journals (*Lancet* 1937 1 1510 and *Brit med J* 1937 2 105) may well serve to emphasise my warning

(A case has recently come to my notice in which this plan was adopted but a woman developed a hæmolytic streptococcus infection on the 13th day—i.e., 10 days after stopping the drug. That, I suspect, will happen only very rarely, and I hardly think it constitutes a sufficient reason for prolonging the prophylactic treatment *as a rule* beyond the fourth day.)

(2) A woman at full term is found to have erysipelas of the foot, or an "angry" septic wound, or tonsillitis. If she is not already receiving one of these drugs for the cure of these conditions it should be given immediately labour starts—and in this case continued beyond the fourth day.

(3) A doctor is called to a woman in labour and finds a child in the house with a discharging ear, or hears that another child has recently been sent to hospital with scarlet fever, or that the husband has had a "sore throat." Suspecting that such infections were due to hæmolytic streptococci and that the dust in the mother's room must be *infected, treatment with sulphanilamide should be instituted at once.*

Finally may I urge that it is of very great importance for the future of obstetrics, and also of medicine and surgery, that we should try to arrive at some estimate of what can be achieved by prophylaxis along these lines. It will be very difficult to obtain statistically valuable data from the treatment of individual cases or small groups, but some indication of probable success, or of certain failure, may be obtained if careful records are kept by medical officers who employ such methods for the control of outbreaks of puerperal sepsis in maternity institutions. (It is of course essential that such outbreaks should have been bacteriologically investigated.) I shall be very glad to file any such records as a basis for publication in due course when a sufficient number has accumulated.

I am, Sir, yours *faithfully*,
LEONARD COLEBROOK.

Bernhard Baron Memorial Research Laboratories,
Queen Charlotte's Hospital, July 23rd.

PASTORAL PSYCHOTHERAPY

To the Editor of THE LANCET

SIR,—I am sorry Dr. Kitchin is so confused about the meaning of "psychotherapy," even if she has not given much consideration to the matter. It is a medical term meaning treatment by psychical means, just as hydrotherapy implies treatment by water. It does *not* mean a "cure of souls" since it can be extended to organic disease (as in the removal of warts by suggestion!). The word for the ministration of the priest is not and never has been psychotherapy but "spiritual or religious consolation." Now if the Guild were to call itself the "Guild of Religious Consolation" no one would object to it, but psychotherapy implies treatment and treatment of the sick. Long ago it was decided that the most suitable persons to treat the sick, whether neurotic or not, were the properly qualified physicians and surgeons and not those good-intentioned, but ignorant, possessors of "a gift for healing."

I must say that Dr. Kitchin's views stagger me. She wishes, although protesting otherwise, to transfer the whole treatment of functional nervous disease from the medical profession into the hands of the clergy (who already complain of being overworked). One might, with as much justification, hand over the treatment of genito-urinary complaints to the plumbers.

Psychotherapy was first investigated scientifically by the medical profession and any advances which have been achieved have been produced by physicians. Suggestion was investigated by Mesmer, Elliotson, Esdaile, Braid, Charcot, Liébeault, Janet, Prince, and Dejerine. Analysis, invented by Freud, was investigated by Adler and Jung (whose contributions to clinical psychotherapy, by the way, are negligible), Stekel, Ross, and others. All except Janet (a teacher of philosophy) were physicians. Can Dr. Kitchin point to a single advance made by a priest? Is it unreasonable therefore to suggest that those who discovered and advanced a treatment will be more likely to use it properly and advance it further than those who in the past have discouraged it?

In the report issued by the Lambeth Conference on psychotherapy in 1920 it states clearly that "our committee has so far found no evidence of any cases of healing which cannot be paralleled by similar cures wrought by psychotherapy without religion, and by instances of spontaneous healing which often occur even in the gravest cases in ordinary medical practice." Moreover, in those clinics which practise strict psychoanalysis (i.e., without the use of religion) the statistical results are better, although the treatment is rather longer, than in those clinics in which treatment is not technically so strict (i.e., in which religion may be included). If we compare this with physical medicine (say auricular fibrillation) and find that the use of a medicine (digitalis) has the same action with or without religion we adopt the scientific attitude and remove the superfluity. In a criticism of C. G. Jung in my book "Modern Discoveries in Medical Psychology" (Macmillan 1937) I stated that "religion has as much (and no more) connexion with the treatment of the neuroses as it has with the treatment of pneumonia" and I still maintain that belief.

I agree with Dr. Dillon "that firm adherence to scientific principles was never more necessary than it is in psychotherapy to-day," but shall we get it by handing psychotherapy to the clergy? Those who heal by religion do so by suggestion but utilise it without any attempt to study it or even understand its nature—i.e., empirically.

I deplore the tone of Dr. Kitchin's letter, which reminds me of the letters which used to appear in the lay press advocating osteopathy and abusing the medical profession. I am sorry Dr. Kitchin finds her colleagues "by temperament and training quite unfitted" to treat the neuroses. My experience is the opposite. I have found the general practitioner patient and understanding with neurotics, and generous in sending them to the specialist if his own efforts have failed. On the other hand, the specialist in this work usually does a large amount of honorary work (I have done between ten and twenty hours per week for the last seven years) in hospitals and is always willing to see privately the middle-class patient at what are really uneconomic fees. I agree that there is a shortage of psychotherapists in the suburbs and provinces but that is due to the sluggishness of the hospital committees in instituting psychotherapeutic departments in the hospitals concerned. This is slowly being corrected as their worth is being recognised. There are ample facilities for the training of qualified medical men (as the Guild admits in its *pamphlet) in the teaching hospitals and institutes for* psychotherapy.

A great deal of fog has been raised to obscure the intention of the Guild, but the issue is really quite simple. A man is either ill or well. If he is ill the proper person to treat him is the doctor. If he is well he needs no treatment (can Dr. Kitchin deny that?)

The pamphlet issued by the Guild says: "The doctor is often proving himself competent to help where the priest is at loss and no constructive steps have yet been taken by the churches to equip certain of their ministers and responsible laymen with the requisite training for this work. Can Dr Kitchin or the Guild deny that this shows a desire to encroach on medicine and does it not encourage not only the clergy but also laymen in religion?

Those who encourage the unqualified practitioner betray their patients into grave danger and not only their patients but their colleagues and that host of physicians whose labour and sacrifice have given us our heritage of medicine. The great weight of medical opinion is against the establishment of unqualified practice whatever the motives and however disguised the intrusion. I repeat my original assertion that those who value their reputations and their colleague opinion will refrain from supporting the Guild of Pastoral Psychotherapy or any similar association which fosters unqualified practice.

I am, Sir yours faithfully

Harley-street W July 24th. CLIFFORD ALLEN

To the Editor of THE LANCET

SIR,—Dr Clifford Allen s letter in your issue of July 17th has just been brought to my notice. As the person responsible for sending to Dr Allen the memorandum of which he complains may I be permitted to make some reply to his remarks?

It is singularly unfortunate I think, that while he claims for the qualified physician a point of view detached unemotional and scientific, Dr Allen betrays none of these qualities in his letter to you He bases his arguments upon a series of dangerously unscientific generalisations, so obvious that I need not point them out and he fails to make any comment upon the one issue which is really raised both by his letter and the memorandum which prompted it.

This issue is a fundamentally important one which deserves, both from the clergy and the medical profession more serious examination than it appears yet to have been given. Neither in religious nor scientific circles is it any longer possible I believe to describe human personality as a tripartite entity body mind and spirit. We think of it nowadays as a psycho physical unity Whatever its ultimate nature may be, whether "spiritual or material it is describable only in terms of function as body mind or mind body This definition is generally accepted I need not therefore defend it But mark its corollary *all disorders of personality including those hitherto described as spiritual are manifested either mentally or physically or both* Thus there is no longer any way of distinguishing a category of human distresses or maladjustments which is spiritual but not psychological" and there is no sort of physical disorder without some psychological concomitant or effect.

Now Dr Allen affirms roundly that psychotherapy is a branch of medicine and Lord Horder has said that he does not agree with the clergy practising psychotherapy But by the accepted definition this word psychotherapy must include every sort of ministry it is possible to afford to the soul spirit or mind of man the spiritual consolations of religion not excepted—so that by one handsome and inclusive gesture both Lord Horder and your correspondent make the medical profession exclusively responsible for the whole spiritual, moral and mental direction of the human race, in its every trial, difficulty and vicissitude from the cradle to the grave

I doubt whether the majority of your professional readers would care to assume this responsibility even if it could be shown that a medical training is an adequate equipment for it However difficult it may be in theory to distinguish the psychic from the physical aspects of human personality I believe that most medical men would agree that for practical purposes it is useful to draw the line somewhere and allow that in an imperfect world there is a province for the cure of souls' a point at which it may be accepted that the physician s responsibility for his patient's spiritual ' welfare ceases

If so much be granted the question then arises since every activity of the priest minister or spiritual director is necessarily psychotherapeutic in its purpose—whether it take the form of a sermon or a vestry consultation—is there any particularly scientific reason for saying in effect I have no objection to a man doing this work in ignorance, but do resent as an encroachment upon the province of medicine any attempt to do it with knowledge and skill ?

As this matter appears to me at the moment—and I welcome correction—there are only two alternatives Either the medical profession must avow that the whole ministry of religion is unnecessary and redundant in the life of the modern world or the situation must be accepted that the whole work of the church is essentially psychotherapeutic, since They that are whole have no need of a physician. Acceptance of the latter alternative implies that it is not merely the right but the first duty and responsibility of the clergyman to equip himself with the scientific knowledge that will help him to be as competent in his sphere of labour as the doctor is in his. If the result of that training is only to enable him to recognise his own limitations surely it is sufficiently warranted?

The Guild of Pastoral Psychotherapy is being formed not to train the clergy to perform a branch of medicine but to enable the minister of religion to fulfil his part in a ministry of healing which as I see it, involves and for some time to come must continue to involve the intimate coöperation of religion and medicine. Until we know with finality whether human personality is essentially a material organism functioning psychically or a spiritual organism functioning physically I do not see how the necessity for such coöperation is to be avoided, or how either doctor or priest can desire to assert exclusive responsibility *for the whole mysterious entity to which each* at present ministers in part.

But until a claim of that sort can with justice be made is it not merely juggling with words to describe pastoral psychotherapy as a branch of medicine?

I am Sir yours faithfully

A. B W FLETCHER
Hon. Sec. Guild of Pastoral Psychotherapy

Dorset square London N W July 27th.

THE OVER-TREATMENT OF GONORRHŒA

To the Editor of THE LANCET

SIR—Mr Nicholls has raised certain very important points in his letters of March 20th and July 24th If I interpret him correctly he believes that the methods at present employed for the treatment of gonorrhœa are opposed to fundamental principles and he also suggests that these methods, unsound as they are are frequently misapplied by clinic medical officers I have contended and still contend that in the second matter he has found the wrong scapegoat With this statement that the present methods of treating gonorrhœa in the male are fundamentally wrong and quite unlike any other established surgical procedure I am in entire agreement, and I would extend this opinion to the treatment of gonorrhœa in the female. This was my impression after I became an assistant in a gonorrhœa department, then in the hands of genito urinary surgeons, and the experience of some years has served to establish this as a firm conviction. I see far too many patients with gonorrhœa whom over treatment, or under-treatment, or any treatment, will not enable to pass the tests of cure which I believe to be essential. The question is what is to be done about it.

If one seeks a parallel in other fields of medicine there is the problem of the treatment of cancer, which is a far less common disease than gonorrhœa with a smaller sum total of harmful effect upon the community. The remedy is being sought in a campaign of intensive research backed by the whole-hearted interest of the medical profession and the lay public, and with almost unlimited financial support. For the study of gonorrhœa not one of these advantages is available.

Research in gonorrhœa in this country is almost negligible, and is for the most part limited to the spare time of clinic medical officers, most of whom are already overburdened by routine work. The story is one of lamentable neglect. During the past five or six years, for instance, remarkable results have been reported in the United States, and elsewhere, from the treatment of gonorrhœa by fever induced by physical methods. So far as I am aware, no attempt has been made to introduce this method for the treatment of gonorrhœa in this country. The treatment is rational and effective, but requires specially trained personnel and therefore costs money. The medical profession must be well aware of the vast total of mental and bodily ill health for which gonorrhœa is responsible, yet this disease is considered unworthy of financial support for the purpose of improving methods of treatment.

Mr Nicholls's interest in the subject does him credit, and if he will cease to attack the much abused venereal diseases officer and direct attention to the apathy and unreasoning prejudice of colleagues, his efforts may not be in vain.

I am, Sir, yours faithfully,

AMBROSE J KING

Harley street W July 26th

THE REVISED MEDICAL CURRICULUM

To the Editor of THE LANCET

SIR,—May I be allowed to correct Sir E Graham Little's misconception of my letter dealing with the relationship between the General Medical Council and medical schools?

I thought everybody appreciated the fact that the General Medical Council resolutions laid down the *minimum* standard for the medical curriculum and that medical schools are in no way prohibited from exceeding this minimum standard. Perhaps I ought to point out too that "standard" and "length" of curriculum are not necessarily synonymous. There was no suggestion in my letter of "complete independence" of medical schools so far as curriculum is concerned.

With regard to the restriction of opportunity for medical study to the relatively well to do being *confirmed* by the evidence of figures contributed by the University Grants Committee quoted in your issue of July 10th, I think I would hesitate to use the word "confirmed", there are medical schools in these islands outside London.

If, as Sir Ernest states, "the new curriculum intensifies the evil of overloading," it will only do so as a result of the dangers of too literal interpretation and misplaced zeal on which I commented in the third paragraph of my letter in your issue of July 3rd and not from any fault or design of the General Medical Council.—I am, Sir, yours faithfully,

G A CLARK

Faculty of Medicine The University Sheffield July 23rd

THE RED CROSS IN SPAIN

To the Editor of THE LANCET

SIR,—In your issue of July 10th, under the heading of Parliamentary Intelligence Air Ambulances in Spain, is a statement which I think is likely to give a wrong impression—viz, that our Red Cross organisation is doing nothing in Spain.

Immediately after the outbreak of the Spanish civil war the International Red Cross Committee in Geneva made its customary offer of assistance to both belligerents. This was accepted, and the committee proceeded to give such help as was possible impartially to both sides. The committee, also, following its usual practice, appealed to the national Red Cross Societies for their support.

The British Red Cross Society, after careful consideration, decided to work in Spain through and with the International Committee for two reasons. First, because this method of procedure precluded any possible accusation of partiality to one side or the other, and second, because it enabled a much more economical and effective use to be made of the money, and stores, &c, contributed by the British public in response to the appeal of the British Red Cross Society. With the money received from the British and other national Red Cross Societies the International Committee was able to appoint representatives in the towns and places where the distress among the civilian population was greatest and thus to make the fullest possible use of the resources placed at its disposal.

The response made to the appeal of the British Red Cross Society was not large, and the cost of dispatching and maintaining its own representatives and missions to Spain would have swallowed up most if not all of the money, leaving little available for the actual succour of distress in that country. Moreover, the Society would inevitably have been charged with partiality—probably by both sides.

That more and ever more help is needed for the relief of the civilian population who are suffering so terribly in Spain is only too sadly apparent from the accounts of the horrors which fill the columns of the daily press. Every penny that we receive is sent at once to Geneva, or is expended in the purchase of stores or equipment of which the International Committee tell us there is urgent need.

May I, therefore, renew the appeal of the Red Cross? No words of mine can add to the sadness of Spain's distress and the urgency of her need of all the help that we can give her.

I am, Sir, yours faithfully,

EDWARD STEWART, M.D, M R C P,
Deputy Chairman Executive Committee British Red Cross Society

14 Grosvenor-crescent, S W July 27th

NOISE

To the Editor of THE LANCET

SIR,—With reference to Sir Nairne Sandeman's letter in your issue of July 17th, may I point out that he refers to an aspect of the noise problem which has for some time been receiving the most careful con sideration of the Anti Noise League and we are particularly studying the question of the sound proofing of hospitals and nursing homes to prevent not only external but internal noises disturbing patients An article on the subject will be seen in the July issue of our magazine *Quiet* and our technical committee have published a pamphlet on it As regards noisy motor cars the law already provides for inadequate silencing and for unnecessarily noisy driving but I am afraid that the enforcement of these laws by the police still leaves much to be desired.

I am Sir yours faithfully
C H ROBINSON
Secretary of the Anti Noise League

66 Victoria street London S W 1 July 2nd

AN ALL INDIA LEAGUE OF HEALTH

To the Editor of THE LANCET

SIR,—I saw in your issue of July 10th (p 114) a project for establishing an All India League of Health and Lord Horder's suggestion to make the people of India health conscious I am not sure about the health unconsciousness of the Indians; but I note that the High Commissioner for India spoke of the poverty of the people as the great obstacle to health work. My own opinion is that it is not the poverty but the lack of fellowship with poor people that is responsible. India has reached the stage when she might hold her own with this country on questions of health but it must be through direct contact with poor people and it is the licentiate class of the medical profession in India, who form the vast majority of the medical profession that have this contact and can contribute most to medical progress through their service and sacrifice In the scheme of such a League of Health are these licentiates to share and share alike or are they to be excluded as untouchables? As a past president of the Bombay branch of the All India Medical Licentiates Association I would ask if the time has not come to include licentiates in the Medical Register of the United Kingdom. Their inclusion would give them the chance of becoming a recognised and useful body and thus add to the hope of New India.

I am Sir yours faithfully
F TARAPORVALA.

London S.W July 23rd.

LONDON CORONERS QUALIFICATIONS

To the Editor of THE LANCET

SIR,—In a recent public notice inviting applications for the position of coroner for the County of London, which is the second relating to this office, it is significant that the terms of the advertisement differ appreciably from those of the first Of material interest to the medical faculty is the point that stress is laid on legal rather than on scientific qualifications This would *suggest unjust discrimination* The stipulation that solicitors or barristers who are candidates must possess one of the qualifications required by Section 1 of the Coroners (Amendment) Act 1926 is redundant and tending to obscure the conditions prescribed by the Act. There is no other qualification required except that of five years standing in his profession which affects the medical practitioner The Act clearly indicates the intention of its framers. It is illegal to disallow the candidature of any person that Section 1 enumerates as being competent to occupy this ancient office It is inconsistent with the terms of the advertisement to *state that* due weight will be given to a knowledge of forensic medicine for only a doctor can have this knowledge which is peculiar to medical education It is entirely outside the scope of a lawyer's attainments however otherwise distinguished. While the authorities concerned may desire qualifications additional to those explicitly stipulated by the Act they may not exclude even by implication those whom the Act describes as eligible. It is unfortunate that emphasis is laid so often on the special claim of the former deputy to consideration. The deputy is the nominee of an existing coroner and apart from some experience may possess but the scantiest qualifications. This system is undemocratic and tends to perpetuate a monopoly of 'vested interests

I am Sir yours faithfully
SEDULIUS

July 24th.

THE LANCET 100 YEARS AGO

July 29th 1837 p 660

From a leading article

Priority! What a magic word —as dear to the *soi-disant* discoverer as is honour to the maiden glory to the soldier or freedom to the patriot's heart A celebrated historian has remarked that of all civil commotions the most sanguinary and inveterate are those which arise in consequence of religious dissensions Even thus is it with the feuds of discoverers *Si parvis componere magna* Priority is a hidden treasure suddenly brought to light upon which every adventurer falls each determined to carry off at least a portion of the booty if he fail to appropriate the whole Hence the moment that a new fact is announced —a fresh *discovery in medical science is proclaimed* and a troop of foragers are on the *qui vive*, like passengers in a street when the cry of pick pocket!' stop-thief! is raised The more prudent consult their memories or their note-books and there find record at all events of the germ" of the alleged discovery while some literary jackall discharges from the venthole of his empty noddle the only idea that was ever contained in that cavity and with a pertinacity which is peculiar to his class insists on its identity with the fact announced declaring that it was familiar to him from his childhood or handed down to him perhaps from a long line of illustrious ancestors The quarrel once seriously aroused the partizans of each claimant forthwith rally round their principal, and the battle becomes general Hard words are interchanged and men who have hitherto been as "honourable as BRUTUS suddenly find themselves arraigned as thieves The learned are convicted of profound ignorance men of veracity are shewn to be false witnesses; social order is sacrificed to personal vanity and friendship changes into hatred and esteem into contempt

LINCOLN COUNTY HOSPITAL.—Contributions for the new buildings at this hospital now amount to £53 897 and its overdraft has been reduced to £2500 The new block is to include an operating theatre The hospital possesses a sufficient supply of radium and it is desired to have a radium centre at the north and south of the county as well as in the middle It is also hoped to develop the work on fractures though it will not be possible at present to have a special wing for these cases There is a waiting list of about 300

SHEFFIELD HOSPITAL CONTRIBUTORY SCHEME.—Sheffield which is the pioneer of the scheme for the deduction of a penny in the pound from the weekly wages of steelwork operatives has inaugurated an extended plan to cover black-coated workers who find the cost of nursing homes prohibitive There is no income limit The voluntary hospitals in Sheffield receive £120 000 a year from the scheme and benefits to contributors include financial help towards the cost of operations nursing home or pay ward fees Grants are also made towards other expenses incurred by illness

PARLIAMENTARY INTELLIGENCE

NEW MILK REGULATIONS

On July 23rd in the House of Commons Mr W S MORRISON, the Minister of Agriculture, submitted for approval the amendments of the Milk Marketing Scheme 1933 He said that these were to ensure more efficient and better operation The producers of tuberculin-tested milk were brought into the scheme for the first time, and the object was to secure that this high quality milk should be marketed through the national organisation under conditions which would encourage its continued production. The Milk Board had also come to the conclusion that under the present arrangement producer retailers, who were mostly small men, were being asked to make a contribution that was excessive, and they therefore proposed an amendment which would result in smaller contributions being paid by producer-retailers, according to the quality of milk they sold. For accredited producers the contribution would be reduced to ¾*d* , and for tuberculin tested milk to ½*d*

Mr ALEXANDER said he thought that if they wanted to increase the consumption of milk it was a sine qua non that it should be fit at all times for human consumption, and a producer who had been found guilty of wilfully adulterating milk should be prevented from selling milk until he could provide evidence that it was suitable—even to the cancellation of contracts For sometime past bodies like the Food Council, the Consumers Committee, and the Cutforth Commission had made references, not always favourable, to the possibility of delivering milk to be sold at differential prices without the process services of pasteurisation and bottling, the general argument being that they could reduce the price of milk if they asked the consumer to pay only for the type of service rendered. He felt that behind that lay the much more important consideration of public health. The Ministry of Health were now actively considering what their attitude should be regarding pasteurised milk. He would remind the House of the epidemic last year at Bournemouth, where over 50 deaths and over 500 cases were directly traced to the supply of milk from one producer selling milk loose and raw —Mr MACQUISTEN "You mean fresh milk, not raw "—Mr ALEXANDER said he was prepared to take the correction, what he wished to impress upon the House was that 50 people died. People who argued as between pasteurisation and fresh milk must have regard to the health of the community At this moment two important municipal corporations, Poole and Glasgow, had Bills before the House containing a clause giving compulsory pasteurisation powers The Ministry of Health had deferred the matter and were looking into it The Government had also asked all local authorities who supplied milk to school children that as far as possible they should supply pasteurised milk. The reduction of the producer-retailer's contribution would place him in a very favourable position in relation to the vast majority of the trade who had for years laid down expensive capital plants for the pasteurisation and bottling of milk in the interests of public health Instead of assisting the consumption of fresh milk so vital to the health of the nation there was a possibility of a reduction of the amount supplied for human consumption That was a point which had not been fully considered.

Mr MACQUISTEN said fresh milk was the only milk which was worth drinking The one really bright spot in what the Minister had said was the statement that he was going to reduce the levy on the T T producer to ½*d* a gallon It would be far better to take steps to keep down the rabbit pest which had a lot to do with the spread of bovine tuberculosis The retail price of milk in Scotland was now 2*s* 4*d* a gallon It was no use talking about nutrition and malnutrition as long as that was the Milk Board's price and as long as a man who sold his milk cheap because he could produce it cheaper was treated as a felon

Mr W S MORRISON, replying to the debate, said the crime of adulteration carried its own penalty, and he did not think the cases of it were numerous enough to warrant any real objection to these amendments of the Milk Marketing Scheme Objection had been taken on the grounds of public health to the reduction of the contribution of producer-retailers, and it had been asked why they should sell milk which had not been subjected to processing There was a sweeping generalisation implied in Mr Alexander's argument that the milk supplied by producer-retailers was of inferior quality He himself thought there were many producer-retailers in the country who did their best and with success to supply decent milk, and if producers as a whole were willing to carry out their obligations in the manner suggested the House could rest assured that it would be in the interests of justice The Government were not departing in the least from their endeavour to get the quality of the milk supplied by producer-retailers up to a higher standard There was ample inducement to go forward along the line of progress in supplying clean and wholesome milk.

The motion was agreed to

HEALTH AND SAFETY IN THE MINES

The House of Commons on July 26th went into Committee of Supply on the Civil Estimates, and discussed a vote to complete the sum necessary for the salaries and expenses of the Mines Department of the Board of Trade

Capt CROOKSHANK, Secretary for Mines, said that questions affecting the health and safety of the 780,000 men employed in the mining industry—silicosis, nystagmus, and so on—must be the constant preoccupation of anyone who held his office Although in certain directions they could note a reduction, they could not be merely complacent in the matter and they must regard it merely as a starting point for further efforts in the future The Royal Commission on Safety and Health had been labouring very strenuously during the last year and was still sitting During 1936 790 persons were killed in collieries—the lowest figure on record for a full year's working—and this would have been more impressive but for the Wharncliffe disaster last August The number of killed came out at 3 36 per 1,000,000 tons raised, or 0 39 per 100,000 man shifts worked

One aspect was a most bitter disappointment to all In spite of all that had been done by boys' classes, training grounds, safety officers and propaganda to decrease the accident-rate for boys, this had, compared with the average for the last six years, increased in the past year, together with the number of boys employed Something was still very wrong somewhere It was true that boys were young and had high spirits, and they might be rash and careless, but it was incumbent upon others to make them see the difficulties and dangers which they had to face A great deal more supervision was required and older and more experienced workers as well as officials could do a great deal by saying the right word in due season In the last six months 29,000 boys were employed, 29 were killed and the number of three days disablement cases was 5942 For the previous six months the figures were 30,000, 24 and 5487 respectively The safety classes movement had gone on with great strength and had been satisfactorily started in every coal field except South Wales, and recently there had been intensive efforts made by local authorities, coal owners, officials, and workers to coöperate and improve the position The movement deserved far wider support in South Wales, if for no other reason than that the accident-rate for boys in South Wales was higher than the general average for the country They had had great support for these safety classes from the Safety First Association, who had published a very striking poster which had had a wide distribution

There had been a tremendous increase in the use of protective equipment Last year the number of hard hats supplied rose by no less than 150 000 and in one particular area Swansea there was a very noticeable increase in the use of hard hats from 700 at the beginning of the year to 4425 at the end of the year There were many pits where the hard hat was universally used and they were now beginning to see the effect Head injuries were fewer and also less severe in 1935 there were 6·27 per 100 000 man shifts and had dropped last year to 5·56 The difference in the proportion of those injured for less than two weeks was 49 per cent for 1936 as compared with 45 per cent in the previous year and those injured for over two weeks was 51 per cent compared with 55 per cent for the previous year A report had been presented on the inquiry into the explosion at the Wharncliffe Colliery, which raised an important problem in connexion with stone dust In this case it was clear that although stone dusting was generally speaking carried on in accordance with the regulations it was ineffective in the roadway in preventing the spread and development of the initial fire damp explosions H was considering new regulations dealing with stone dust They had been circulated for preliminary consultation with the usual bodies concerned He was sorry to say that the figures of those injured last year at 136 000 showed an increase over the previous year of 2000 That showed in addition to what he had said about boys that no one could afford to relax any of the precautions that could be taken. Unfortunately the inspectors reports showed many cases where accidents might perhaps have been avoided

He had nothing particular to say about silicosis at the moment The Medical Research Council had recently requested the Industrial Pulmonary Diseases Committee to start a really comprehensive investigation into silicosis and other pulmonary diseases in South Wales That was a step to which he had given his strongest support The Miners Welfare Fund had assisted financially and the South Wales Miners Federation had promised to give all the coöperation that it could Captain Hay one of the inspectors of mines, had been specially detailed for this work, and spent a lot of his time coöperating with mine and quarry managements in trying to devise the best means of prevention Under the Factories Bill quarries and pitbanks of metalliferous mines would be left out of the Factories Act and would come under Mines and Quarries Act For this purpose they would be transferred from the Home Office to the Mines Department Consequently it was necessary to draw up new regulations to deal with this problem and this was now being done —Mr JAMES GRIFFITHS: The Minister said that the Medical Research Council by arrangement with the industry was to investigate the purely medical side of the problem It will spend most of its time investigating the question of what are the precise diseases from which the men who are disabled are suffering and which are declared to be other than silicosis Will anything be done at the same time or afterwards to investigate thoroughly the problem of how the disease can be prevented ?—Capt CROOKSHANK Generally speaking one needs to know what a thing is before one can prevent it Captain Hay as I have said spends the whole of his time trying to devise methods of prevention

Mr PALING said that in view of the boasted progress in the science of mining it seemed incredible that the accident-rate in mines could not be reduced The figures meant that on the average every man working underground met with an accident once every five years The number killed approximated to nearly 1000 each year More efforts should be made to bring down these alarming figures, and if the question of cost were not such a dominating factor he thought that the figures could be brought down

After further debate Captain CROOKSHANK, replying to points that had been raised said that with regard to accidents to boys in 1936 in the group 14 to 16 there were 20 killed and 5932 injured and in the group 16 and under 18 there were 26 killed and 8247 injured The numbers employed in the two groups were 20 000 in the first instance and just under 42 000 in the other

A motion to reduce the vote was negatived, and it was then agreed to

ERADICATION OF ANIMAL DISEASES

On July 20th in the House of Lords the Agriculture Bill was read a second time The Earl of FEVERSHAM moving the reading said that the measure embodied a long term programme for the eradication of animal disease and recast the existing machinery to attain that goal. It was proposed that the local and central veterinary services should be amalgamated into a State veterinary service —Lord ADDISON expressed the hope that some of the money voted for the eradication of disease would be devoted to research. With very inadequate finance an Agricultural Research Committee had been established on the lines of the Medical Research Committee, and if for a long time past research with animal diseases had been organised and well directed with pay such as would attract the right young men into it and keep them in it much further progress would have been made. He hoped that the expenditure under this Bill would not take the form of paying too much for animals found to be diseased but that it would aim at seeking to remove the causes of disease which could only be done by large-scale, patient encouragement of research —Viscount BLEDISLOE said he hoped the time had come when the status of veterinary surgeons in this country would be improved —Lord CRANWORTH urged that one of the earliest forms of research should be research into the tuberculosis test He said that everyone connected with cattle knew that the double intradermal test at present in use was utterly unreliable

The Earl of GLASGOW said that in the more progressive counties in Scotland where the local authorities had developed a coördinated medical veterinary, and bacteriological service they were considerably concerned that the proposals of the Bill might seriously affect not only the veterinary but also the health services generally In these the veterinary officer was only one link in the chain of control, the others being the sanitary inspector and the county medical officer of health. Now it was proposed to break this chain, but, important as animal disease might be public health was of greater importance

The Bill was read a second time

THE BILL IN COMMITTEE

On July 22nd the Bill was considered by the House of Lords in Committee

The Earl of FEVERSHAM persuaded Lord CRANWORTH to withdraw an amendment similar to that moved in the House of Commons the week before providing that the chief veterinary officer of the Ministry of Agriculture should supervise the veterinary officers and should be responsible directly to the Minister The Earl of FEVERSHAM reiterated the Government s objections—namely that it was hardly proper for Parliament to give statutory instructions to a Minister about the administrative arrangements within his department and that it would be contrary to precedent for the chief veterinary officer to be responsible for other than his own veterinary work and that of the staff under him. There was he said no statutory provision that compelled the Minister of Health to appoint a chief medical officer or said that the latter had to have direct access to the Minister That was done in accordance with administrative convenience and at the wish of the Minister himself These things were normally done by conference and wherever representation to the Minister was necessary there was no doubt that the chief veterinary officer would have access to him at any time to raise a point for which he was responsible

The amendment was withdrawn.

On clause 19 Lord SEMPILL moved an amendment to provide that Parliament should have the power to approve or reject arrangements made by the Minister for the purpose of special payments in connexion with the eradication of bovine tuberculosis Parliament should retain in its own hands the power to veto arrangements of which it did not approve The Earl of FEVERSHAM persuaded the House to negative this, pointing out that Parliament did not consider this procedure necessary when it passed the Milk Act of 1934, and this was little more than a re-enactment of those provisions There would be ample opportunity under the existing procedure to bring any points of criticism before the respective Minister and to register dissent from the proposals

On clause 22, dealing with eradication areas and attested areas, the Earl of GLASGOW moved an amendment to provide that the Minister should consult with the interested local authorities before making Orders, but he withdrew it when the Earl of FEVERSHAM repeated the Minister of Agriculture's assurance in the House of Commons that he would before making any arrangements consult in every case with the local authorities

On clause 32, which applied the measure to Scotland, Lord ROWALLAN moved an amendment providing for the transfer of the Minister of certain functions of veterinary inspectors of local authorities under the Diseases of Animals Acts, and that the existing functions of veterinary inspectors and officers in Scotland under any of the enactments relating to milk or to dairies should continue to be administered in Scotland as they were at present—namely, by the local authorities His contention, as well as that of the County Council's Association of Scotland, was that if the three main veterinary duties of the local authorities—the routine veterinary inspection of dairy herds, tuberculin testing and veterinary inspection under the Milk (Special Designations) Order, for Scotland, and diagnostic inquiries into the various scheduled diseases, including tuberculosis—were to be taken away there was no logical reason for leaving them with certain other duties that they had to undertake and for the expense of which they were responsible, but over which they felt they had no control whatever

Lord SALTOUN in supporting the amendment said that if the object and determination of the Government was to take over the administration of the Diseases of Animals Acts and to put all these veterinary health services on such a basis that they would raise the standard to even greater heights such as Scotland hoped to attain under her own scheme, then as a true partner Scotland was ready to make the sacrifice But if their health services were going to be shattered in order to ginger up other people to a standard which was below the Scottish standard, they felt that they were asked to make a sacrifice which they should not be asked to make The Earl of FEVERSHAM said that the Government could not consider the proposal because it would involve very great difficulties in the administration of what was hoped would be a service which was directed essentially to the better eradication of animal diseases generally Lord ROWALLAN replied that he could not believe that the divided control in the prevention of disease and the diagnosis of disease which they were going to have under this clause was ever going to succeed While he would withdraw the amendment, he would reserve his right to move another at a later stage

The Earl of GLASGOW moved to insert a new paragraph, making it the duty of officers appointed by the Minister to furnish any information reasonably required by the local authority or their medical officer of health any disease of animals affecting the health of persons resident in the area of the authority, and to trace the source of infection wherever reasonably practicable

The Earl of FEVERSHAM assured him, however, that this would be done in the future a great deal more than in the past and the amendment was withdrawn. This concluded the Committee stage of the Bill

On July 26th the Agricultural Bill passed the report stage

THE FACTORIES BILL

In the House of Lords on July 22nd the Report stage of the Factories Bill was concluded

An amendment, moved by the Earl of MUNSTER, providing that washing facilities should include soap and clean towels or other suitable means of cleaning or drying was agreed to

The Earl of MUNSTER proposed adding to the clause dealing with the certificate of fitness for employment of young persons, provisions whereby the examining surgeon may direct that the certificate should continue to have effect after the young person has attained the age of 16, but not after 18, also that in a condition requiring re-examination he may vary the certificate or revoke it, when a young person under 16 shall not remain in any employment to which it relates The amendment was agreed to

On July 23rd the Bill was read the third time and passed

NOTES ON CURRENT TOPICS

Local Government Superannuation Bill

In the House of Lords on July 19th the Local Government Superannuation Bill was considered in Committee

Lord ADDISON moved that the provisions of Subsection (1) of Clause 5 (power to admit employees of statutory undertakers and certain associations) should also apply to voluntary organisations *for the provision of maternity and child welfare* services and to health visitors and superintendents of welfare centres employed by them

Viscount GAGE said that the clause as it stood had been accepted by the Government as an amendment in the House of Commons The Minister of Health had undertaken to explore the possibilities in another matter affecting the superannuation of nurses and health visitors It might be that consultation with the local authorities and others concerned might throw a different light on the considerations which, as at present envisaged, compelled him to ask that the amendment should not be pressed Lord ADDISON accordingly withdrew it

On Clause 12 (Reckoning of contributing and non-contributing service, war service and service of persons indirectly employed) an amendment moved by Viscount GAGE was accepted It changed the date limiting the extension of an employee's term of service in the forces, that would be taken into account, from Nov 11th, 1918, to Dec 31st, 1920, the date agreed to by the Treasury for Civil Service purposes

On Clause 40 (interpretation) the Earl of KINNOULL moved an amendment to provide that the word "officer" used in the Act should mean any employee directly and regularly employed on duties in any hospital or institute maintained by a local authority, thus bringing council servants as well as council officers into the compulsory superannuation scheme Viscount GAGE said the object of the amendment was to make the whole staff of any hospital or other municipal institution compulsorily superannuable That was a fundamental alteration of the principles of the Bill, which limited the obligation imposed upon local authorities to the superannuation of whole time officers The amendment was therefore negatived and the Bill passed through Committee

The Bill was agreed to on Report on July 22nd and it was read a third time on July 27th and passed

The Finance Bill and the Milk (Amendment) Bill were read a second time

In the House of Commons on July 23rd the Lords amendments to the Marriage Bill (changed to The Matrimonial Causes Bill) were considered and agreed to The Lords amendments to the Cinematograph Films (Animals) Bill were also agreed to

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QUESTION TIME

WEDNESDAY JULY 21ST

Use of Sand and Flint in Sandblasting

Mr JOEL asked the Home Secretary whether his department proposed to introduce further regulations affecting the use of sand and flint in sandblasting —Mr GEOFFREY LLOYD Under Secretary Home Office replied It was hoped that the substitution of steel shot and grit for siliceous abrasives in sandblasting would be adopted voluntarily and good progress was made for some time Recent reports however show that this progress is not being maintained and that there is even a tendency in some quarters to revert to the use of sand. If this attitude continues there will be no alternative but to propose further regulation to deal with the matter

Vaccination of Dockyard Employees

Mr VIANT asked the First Lord of the Admiralty if he was aware that within the past 12 months a large number of building trade operatives had been taken into employment in the Sheerness dockyard and if he would state the reasons why about six weeks ago a number of them were placed on the hired list and compelled to be revaccinated an operation which caused some of them a great deal of suffering and anxiety in view of the fact that a number of them were discharged within a period of five weeks —Mr DUFF COOPER replied: According to the Home Dockyard Regulations all fresh entrants into the dockyard are to be revaccinated or are to produce evidence that they have been successfully vaccinated or revaccinated within the past five years This rule does not apply to men entered for casual or temporary service The men concerned were transferred to the hired list after a period of casual employment in the expectation that continuous employment would be found for them and were accordingly vaccinated Unfortunately owing to circumstances which could not be foreseen at the time this expectation was not fulfilled and 37 men on the hired list have recently been discharged Of these eight have subsequently found employment in other departments of Sheerness dockyard

Mr LEACH: What is successful vaccination? Does it mean that the patient did not die?—No further answer was given

THURSDAY JULY 22ND

Family Budgetary Inquiry

Mr EDWARD DUNN asked the Minister of Labour when he proposed to set up his family household budgetary inquiry; what would be its terms of reference and the personnel of the inquiry and over what area it was proposed to operate —Mr ERNEST BROWN replied It is proposed that about 30 000 working-class households distributed over all parts of Great Britain shall be visited and invited to supply budgets on forms to be provided giving details of their expenditure in each of four separate weeks in October 1937 and in January April, and July 1938 respectively It is hoped that at least 10 000 of these households will supply information in respect of October 1937 and that the great majority of these will also furnish information for the three later weeks The inquiry will be organised through the employment exchanges and it is hoped to obtain the assistance of local committees and of a sufficient number of voluntary helpers in each district to undertake the work of visiting the households and collecting the budgets The inquiry is primarily intended to furnish the data required for a revision of the basis of the official cost-of living index figures but it will also provide information required by the health departments in connexion with questions relating to diet and nutrition In view of the national importance of the inquiry and of the great social value of the information to be obtained I trust that the department may rely on the coöperation of those who are asked to supply information or to assist in collecting the budgets

Mr LEACH: Will the right hon gentleman undertake when the new method of calculation is settled to make corrections for previous years and publish them?

Mr BROWN Preparations are now being made for this exhaustive inquiry and I am hoping to set the whole thing up in detail in the September number of the Ministry of Labour Gazette

Report on Night Baking

Mr BANFIELD asked the Home Secretary whether he had received the report of the committee of inquiry into night baking what was the reason for the delay in presenting the report and what action he proposed to take on the matter —Sir SAMUEL HOARE replied The report of this Committee was only received on Tuesday of last week and as the hon. Member will be aware was presented to Parliament on the following Thursday The Committee by a majority reported against any statutory prohibition of night baking Shortly stated, their view is that while such prohibition would work inequitably among employees and inflict hardship in many cases including a number of bakeries where the work is carried on under the best conditions it would fall far short of providing comprehensive and effective relief to the night baker from the serious social disadvantages under which he labours The situation as presented in the report obviously demands a much more thorough examination than it has been possible to make within the very short time available and I am not in a position at present to make any final announcement of the Government's views on the main issue It is clear however that in view of the nature of the report it would not in any case be possible for the Government to entertain any question of legislation on the subject during the present session

At the end of their report the Committee draw attention to the need for better organisation in this industry and suggest that some recognised body should be set up on which representatives of both sides of the trade might meet together to thresh out their difficulties and devise means for amelioration of conditions The Government regard this suggestion as a very valuable one and are prepared to take action to give effect to it and I am glad to state that the Minister of Labour will be willing to enter into negotiations with the representatives of the two sides for this purpose without delay I feel confident that if some satisfactory joint machinery can be established we could look forward to a great improvement in the general conditions of the industry

Mr BANFIELD asked the Home Secretary if he was aware that this report has caused great disappointment among both workmen and employers; and in view of that would he undertake to go very seriously into the report and see whether something could not be done to help those unfortunate people who were condemned to perpetual night work?—Sir SAMUEL HOARE agreed that this report was so important that the Government obviously could not come to a decision in a few days He undertook to give the report great attention and would announce their decision in due course to the House

Nursery Schools

Mr DAY asked the Parliamentary Secretary to the Board of Education the number of proposals at present before his department for the purpose of opening nursery schools in England and Wales and how many of these proposals were for open-air schools —Mr KENNETH LINDSAY replied: Thirty four proposals for opening nursery schools in England and Wales have been approved in principle by my department and in a number of these cases final plans have been approved. Nine proposals are at present under consideration In all these cases it is proposed that the buildings of the schools shall be constructed on open-air lines

Mr JENKINS asked the number of nursery schools now in existence in Wales and Monmouthshire; the number of children in average attendance; and the number of teachers employed —Mr LINDSAY replied: There are four recognised nursery schools in Wales and Monmouthshire situated at Brynmawr Merthyr Tydfil Rhondda and Swansea These schools have accommodation for 300 children in all and the total number of children in average attendance during the year ended March 31st, 1937, was 228. Eleven teachers are employed, together with a number of unqualified helpers. A proposal for a second nursery school at Rhondda has been approved in principle and a proposal for the provision of a nursery school at Cardiff is at present under consideration.

Free Meals for School-children

Mr RIDLEY asked the Parliamentary Secretary to the Board of Education (1) which county councils provided free solid meals for school children, and (2) which county borough councils did not provide free solid meals for school children.—Mr KENNETH LINDSAY replied: (1) The county councils which make some provision of free solid meals for school-children are the councils for Cambridgeshire, Cheshire, Cumberland, Essex, Lancashire, London, Surrey, the West Riding of Yorkshire and Monmouthshire. (2) The county borough councils which do not provide free solid meals for school children are the councils for Barrow in Furness, Blackpool, Burton on Trent, Chester, Darlington, Eastbourne, Exeter, Gloucester, Great Yarmouth, Plymouth, Rotherham, Warrington, West Bromwich, West Hartlepool, and Worcester.

Working Hours of Hospital Nurses

Sir FRANK SANDERSON asked the Minister of Health whether he would consider introducing legislation making it compulsory upon all hospital authorities to introduce an eight-hour day for their nursing staff, in view of the great strain imposed upon them by the existing eleven hour day and the consequent detrimental effect upon the health of the patients.—Sir KINGSLEY WOOD replied: The question of the working hours of hospital nurses is one of a number of matters affecting the nursing profession which are engaging my attention, and I understand that the associations representing local authorities are in communication with the General Nursing Council regarding certain measures for meeting the situation.

Spirits for Medicinal Purposes

Mr LEE asked the Chancellor of the Exchequer the quantity of spirits used for medicinal preparations or scientific purposes in respect of which rebate was allowed under Section 4 of the Finance Act, 1918, during the year ended March 31st, 1937.—Col COLVILLE, Financial Secretary to the Treasury, replied: The quantity of spirits used for medicinal preparations or scientific purposes in respect of which rebate was allowed under Section 4 of the Finance Act, 1918, as amended, during the year ended March 31st, 1937 was 534,000 proof gallons.

Increase in Industrial Accidents

Mr SHORT asked the Home Secretary whether, since the chief factory inspector's report recorded a large increase in accidents among adults and young persons, he could state what remedial action he proposed to take between now and July 1938, when the new Factory Act came into operation.—Sir SAMUEL HOARE replied: I much regret the increase in accidents during 1936 as compared with 1935 but as the chief inspector points out in the introduction to his report the increase in the number of accidents is partly due to increased employment and statistics over a period of years show that the rate of accidents in proportion to the number of persons in employment is decreasing. I should like to take this further opportunity of emphasising that if any large reduction of accidents is to be obtained, it must be through the exercise of increased care by both employers and workpeople, and that this can best be secured through the development of safety organisations. As the hon Member is aware, the Factory Department has made every effort in the past to promote such development and it will continue to do so.

Mr THORNE: Is not the Home Secretary aware that the chief inspector states that thousands of these accidents are preventable and is he not aware also that a great many of the accidents occur through machinery not being properly protected?

Sir S HOARE: I accept it as perfectly true that a great many accidents both in factories and on the roads are preventable. If only employers and workpeople would pay more attention to precautions there would be many fewer accidents. So far as the factory department of the Home Office are concerned we will do everything in our power to reduce the number.

MONDAY, JULY 26TH

Telephone Calls for Ambulances

Mr DAY asked the Postmaster General whether, in view of the fact that persons desiring to make an emergency call for police, fire, or ambulance from a manual telephone exchange call box had to first insert two pennies in the call box, he would consider if some method of call could be devised to obviate this disadvantage in case the caller was not in possession of the necessary coins at the time of an emergency.—Major TRYON replied: Emergency calls can be made from all street kiosks, whether on manual or automatic exchanges, without the insertion of any money in the coin box. The call is made by means of an emergency push button in the case of a kiosk on a manual exchange.

Rehabilitation of Persons Injured in Accidents

Sir ARNOLD WILSON asked the Minister of Health what, if any, steps he had in contemplation to give effect to the recommendation of the inter departmental committee on the rehabilitation of persons injured by accidents, with particular reference to the treatment of the 200 000 cases of fracture which occurred annually.—Mr BERNAYS, Parliamentary Secretary to the Ministry of Health, replied: My right hon. friend has already sent copies of the Interim Report of this Committee to the county and county borough councils in England and Wales, with a covering circular. In this report the Committee express the hope that they will be in a position to present a further report without delay, and my right hon friend does not propose to take any further general action on this subject until he has received that report.

ETHICAL PHARMACEUTICALS ASSOCIATION.—The second annual meeting of this association was held in London on July 13th, with Mr A C Henry as chairman. It was reported that the executive committee had given consideration to various matters of importance to manufacturers and distributors of ethical pharmaceuticals, the facilities of the association being at all times available to members including the services of a staff ready to deal with inquiries. During the year the membership has increased from 17 to 22. The vice chairman is Mr A W Edwards, the hon treasurer Mr H R Napp, and the secretary Mr F G W Paige. The association's address is 4, Lloyd's avenue, London, E C 3.

SCANDINAVIAN HOSPITALS.—Representatives of Westminster Hospital including Mr Rock Carling, the senior surgeon, and Mr C M Power, the secretary, have been visiting Scandinavia as guests of Mr Bernard Docker, chairman of the hospital. Three days were spent in Stockholm, where Sven Ahlbom, architect of a new general hospital of 1200 beds, which will be ready for occupation in six months, showed them every detail of this new building. Much time was also spent in studying, with the aid of the architect-engineer, Hjalmar Cederstrom, the plans and models of another new hospital of 1500 beds now being built by the municipality. In Sweden the delegates found much to remind them of the plans for the new Westminster Hospital, especially the small wards and the out patient scheme which will bring out patients and in patients together under one administration. The party also visited Helsingfors, Tallin, Danzig, and Copenhagen, where four hospitals were inspected. These included the orthopædic hospital which Mr Power considers unequalled—for efficiency, economy of working and facilities for treatment—among the 77 hospitals at home and abroad which he has visited in connexion with the planning and equipment of new Westminster Hospital. The visitors had as their guide Chief surgeon P Guildal adviser to the Danish Board of Health, who took the chief part in planning this great hospital centre. A report on the tour prepared by Mr Docker, Mr Carling, and Mr Power, will be made available for the use of other British hospitals.

MEDICAL NEWS

University of Oxford

Dr H M Sinclair Oriel College has been elected to an official fellowship and tutorship in physiology at Magdalen College

University of Cambridge

At recent examinations the following candidates were successful —

D.M.R.E

Part I—E H Allen Margaret M M Morrison, J K Muir and V G Vohra.

Part II—A P Booth, Jean Bouchard, J A Brocklebank C J C. Cooke M W Dahab G G Doel, A M. Evans William Irwin, Manuel Leitman C T MacCarthy J R. M. Martin Ved Prakash Harold Pringle, R. R. Rishi D C. Virmani V G Vohra and J W Winchester

University of London

The title of professor of morbid anatomy in the university has been conferred on Dr G R Cameron in respect of the post held by him at University College Hospital medical school. The degree of D Sc in applied physiology has been conferred on Dr G P Crowden and the degree of D Sc. in physiology on Dr Marion G Eggleton an internal student of University College

At recent examinations for the post-graduate diploma in bacteriology the following candidates were successful —

Harry Berry C T Calam, S P Gupta Taliesin Richards Phyllis M. Rountree and N K. Sen

Applications are invited for the William Julius Mickle fellowship of the value of at least £200 which will be awarded by the senate to the graduate of the University resident in London who has done most to advance medical art or science within the last five years. Further information will be found in our advertisement columns

University of Edinburgh

At a graduation ceremony held on July 21st the honorary degree of doctor of laws was conferred on Dr Edwin Bramwell formerly professor of clinical medicine and president of the Royal College of Physicians Edinburgh The following degrees and diplomas were also conferred —

M.D— W M Arnott, †Frank Ayrey J C. Caird, †A. F Cowan, R. W Eason Alexander Haddow *T N Macgregor †H. M. D Shepherd, J K. Slater L D Sutherland, Robert Walmsley and A. M Watt.

Awarded gold medal for thesis

† Commended for thesis.

M.B Ch.B—Jerome Adelmann G O Airey Louis Altman, J P Baird, H A. Barker Barbara U Barnetson M. R. J Behrendt, H J Bell, D K. Binder Isabella R. Bishop T M K. Boog-Scott, C H Bosenberg S. O Bramwell, T J Brownlee, K. L Bruce Jean M'K. Brunton, J E. Buck, A G S Calder Edward Campbell, D L Carmichael, Charles Chesner H. S. Churchward G J Cleland, Joan K. Cunningham, Margaret H Darling J N Davidson Solvan Davison, Bernard Diamond Joseph Dolgin, C. A P Donaldson, E M Donaldson J K. Drummond, D E Durran, Louise F W Eickhoff, ‡J H Frank J W Fraser Helen M. Gardner Sidney Gellis, A. M George ‡A D Gillanders R O Gillhespy Andrew Graham L A. Griffith Charles Groves, John Guthrie R. H Hannah P W Hannay E. I B Harvey J W Heath, A. J Hogan, R. W B Holland Geoffrey Hollingsworth John Hotson, H G H Houghton, Sir Eric Hutchison J E. Hutton Mills ‡James Innes J C. J Ives W O James ‡R. A. Jamieson H C. Jeffrey R W P Johnson, P K. Kaufman, G A. Kelsall W G Kerr H M P Kilgour Frank Lake, F W Laurie, Deirdre M. Lewis Elizabeth I Low, R B Lucas, Martin Ludlam Elizabeth M'Callum Henrietta R. M'Cree W L MacDonald, G D M'Dowall, A A MacGibbon, Walter MacGregor, G D M'Intosh, R. A. M'Kail, John M'Kee Alasdair M'Kelvie D H MacKenzie, Agnes P M'Laren, J A. M'Laren, L A. M. Macleod, William Macleod, Ian Macphail D A Macpherson R. L. Macpherson Sheila M L M'William V S Magnus, G D Malcolm, Joy L G Matson H J S Matthew Harry Meyer John Millar J H Milligan J C Milne Humphrey Milne-Redhead, Arabinda Mondal, L G Morrison A J G Newton Willy Noordenbos I T Northover, R K Ong, H T Osmond, M W Paterson Niels Pedersen D B Peterkin, G J Phillip A. M Phillips Louis Pollack A C Reid ‡K H Roberts, Ethel E. Robertson R. I Robertson, H D Rosenberg William Rosenbloom D C Ross G I M Ross J M H Ross, J M. Ross, R. M Ross A. I Russell, K D Salzmann D L. Savill, G W Senter A C Shelford J W Shield, G F F Sinclair, R S. Small A. G Smith R B Smith A St G Stephenson P D Stewart J D Sutherland Rhoda M Taylor Robert Troup W S Tulloch, ‡Nina A B Verity Doreen M. Waddington, G C. Watt, C. C Wedderburn, D W Whyte A. W Wilkinson O S M Wilson, George Winchester Leila K Wynter Austen Young and R G B Young

‡ With honours.

D.P.H—P G Barrow P L. F de Livera (in absentia) H L de Waal A. M Fraser H W Hall, Noor Husain (in absentia) P L Lai Fook E A Lawrence, V P M'Donagh, I F Mackenzie, V D Scorunetnam Sandanam Sivalingam G F Valentine (in absentia) and Agnes M M. Hunter.

D T M & H—K. B Gore (in absentia) N S Mohammed, William Happer E L Lloyd William Mackie, and William Serle.

Diploma in Psychiatry—James Carson N F MacKenzie and J H Patterson

Diploma in Radiology—J G M'Whirter J R. Pierre (in absentia) and Thomas Sprunt.

The following awards of prizes were made —

Cameron prize in practical therapeutics to James Bertram Collip D.Sc., M.D F R.S professor of biochemistry in McGill University Montreal, in recognition of his many contributions to endocrine therapy and in particular his work on the parathyroid gland Ettles scholarship and Leslie gold medal to F H Roberts, M B ; Scottish Association for Medical Education of Women prize Nina A. B Verity M.B , Mount scholarship in the practice of physic, James Innes, M.B Buchanan scholarship in midwifery and gynecology R. A Jamieson M.B James Scott scholarship in midwifery and gynecology J R Frank, M.B , Conan Doyle prize Alexander Stadlon M B Dorothy Gilfillan memorial prize, Nina A B Verity M B Beaney prize in anatomy and surgery, R. A Jamieson M.B , Royal Victoria Hospital tuberculosis trust gold medal, Elizabeth M'Callum M.B ; Annandale gold medal in clinical surgery James Innes M B Murdoch Brown silver medal in clinical medicine J P Baird, M B ; Wightman prize in clinical medicine, James Innes, M.B. Pattison prize in clinical surgery A W Wilkinson, M.B Goodsir memorial fellowship, Alexander Brown M.B Freeland Barbour fellowship A. I Pirie M B Murchison memorial scholarship in clinical medicine, James Innes M B ; M'Cosh bursary J A Farfor M.B Gunning Victoria jubilee prize in bacteriology Scott Thomson M B Gunning Victoria jubilee prize in pathology W M. Arnott, M D Gunning Victoria jubilee prize in therapeutics Harold Scarborough, M.B Gunning Victoria jubilee prize in zoology C. A Green M.B., and Scott Thomson, M.B (jointly) and Lewis Cameron post-graduate prize, C A. Green, M.B

An address was delivered to the new graduates by Prof Sydney Smith, the promoter

Royal College of Physicians of Edinburgh

A meeting of the College was held on July 20th with Dr W T Ritchie the president in the chair Dr Francis Esmond Reynolds (Glasgow) and Dr Charles Kelman Robertson (Edinburgh) were elected fellows of the college

Royal College of Surgeons of Edinburgh

At a recent meeting of the College with Mr Henry Wade the president in the chair the following who passed the requisite examinations were admitted to the fellowship :—

Winston Eric Austin M.D Manitoba Warwick Hector Bailey M B Sydney , Duncan Ballantine M B Edin. Edward Edwin Barnett M R.C.S. Eng Colattur Raghava Chari, M B Madras Martin Melvin Cruickshank M.D Aberd Robert Henry Dale M R.C.S Eng Walter Knee House M D Manitoba , John Harkness L R.C P Edin , Agnes Jane Herring M.D St. Andrews Monte Jackson, M R.C.S Eng Karl Gerald Wilson James, M.R C.S Eng Hayman Isaac Maister, M R.C.S Eng. Archibald Robert Alexander Marshall, M.B N.Z ; Malcolm Lionel Robert Morley M.B N.Z. Meredith Conley Moore, M.B N.Z. William Fife McGladdery M.R.C.S Eng Margaret Fitz Hugh Procter M.B Liverp James Clifford Samis M.D Kingston , George Ian Scott M B Edin Ivan Hamilton Smith M.D Ontario and Samuel Lockington Strange M.D Liverp

Society of Apothecaries of London

At recent examinations the following candidates were successful :—

Surgery—P A Dixon, Univ of Liverp C I Green, Univ of Oxford and Guy's Hosp C C. B Guest Univ of Sheff B A. Hoogewerf Madras and King's Coll. Hosp G Howell Welsh National School of Medicine , E S. Reed, Univ of Camb and St. Mary's Hosp and O Rochlin, Univ of Melb and Lond Hosp

Medicine.—I W Claiman Univ of Manch G K. Coombes King's Coll Hosp P H Hay Heddle, Westminster Hosp K J Higham, Univ of Durh. , B A. Hoogewerf Madras and King's Coll Hosp , J Meynell, Univ of Manch and J N Roberts Univ of Camb and Charing Cross Hosp

Forensic Medicine—I W Claiman, Univ of Manch , P H Hay Heddle Westminster Hosp K J Higham Univ of Durh ; B A Hoogewerf Madras and King's Coll. Hosp J Meynell, Univ of Manch ; and J N Roberts Univ of Camb and Charing Cross Hosp

Midwifery—M G Braham, Univ of Leeds O D Gilmore Westminster Hosp ; L. Gottlieb, Univ of Frankfort and Lond Hosp K J Higham Univ of Durh , G S. Parker Univ of Manch E. F G Stewart and C. Webb St. Bart's Hosp

J Meynell and J N Roberts having completed the final examination are granted the diploma of the society entitling them to practise medicine surgery and midwifery

British College of Obstetricians and Gynæcologists

At the quarterly meeting of the council, held on July 24th Sir Ewen Maclean was re-elected president, Profs R W Johnstone and M H Phillips were elected vice presidents, Mr Eardley Holland, hon treasurer, Sir Comyns Berkeley, hon appeal treasurer, Prof W Fletcher Shaw, hon secretary, and Mr Frederick Roques, hon librarian

The following were admitted by the president —

Fellowship —Sir Hangaldas Vijbhucandas Mehta (Bombay) *Doris C Gordon (Stratford, New Zealand), *Stephen Langavin (Montreal) and *J A Hopkins (Melbourne)

Membership —*A. L Gilbey (Portsmouth), J R McArthur (Toronto) W L Maccormac (London), W I C Morris (Ayr) D C Racker (Manchester), and S W Wright (Newcastle, Staffs)

* In absentia

The following were elected to the membership —

M C Albuquerque (Bangalore), Eric Ballache (Melbourne) S C Bose (Calcutta) Marjorie R E Boyd (Dublin), F J Burke (Liverpool) Hugh Callagher (Melbourne), Isabella D Cameron (London) Henry Canwarden (London), Mrs D J P Dadabhoy (Bombay) J P Dutt (Calcutta), Edith Ghosh (Calcutta), V B Gokhale (Belgaum India) H F P Grafton (Hamilton, Canada), C J K Hamilton (Liverpool) M R W Hart (Madras), A. F Hollinrake (Hamilton Canada), Meher Homji (Bombay), John Howkins (London), J G H Ince (London), Mary John (India), J W Johnstone (Korumburra, Australia) R. A Logan (Nagpur, India), Poonen Lukese (Travancore) Anna P Martin L de Menesies (Nagpur), E A Menon (Waltair India) D N Mitra (Bengal), Mrs Monohan (Madras) Una Morton (Agra) Bamendas Mukherjee and Herbert Murray (Calcutta), A N Palit (Bihar India), N A. Purandhare (Bombay), P W S Riley (New Zealand) Akhilanath Sarkar (Patna) M N Sarkar (Calcutta), G A Simpson (Sernia Canada) B H Singh (Bengal), A B Stenhouse (London), R. K K Tampan (Edgmore India) P Venkatagri (Madras) Margaret Venters (Manchester) and R J Wotherspoon (Glasgow)

Post-graduate Lectures on Ophthalmology

A course of six lectures on some aspects of medical ophthalmology will be given in the Tennent Memorial Institute of Ophthalmology, Church-street, Glasgow, on the following dates from Sept 7th to Oct 12th at 4 30 P.M The first two lectures will be given by Prof A. J Ballantyne on hypertension, vascular sclerosis and renal disease Dr John Marshall will speak on diabetes, and Dr I Chesar Michaelson on diseases of the central nervous system Further information may be had from Prof Ballantyne, Department of Ophthalmology, University, Glasgow

Cheap Milk A Deputation to the Minister

Sir Kingsley Wood, the Minister of Health, received on Tuesday a deputation from the Children's Minimum Council to urge that milk should be provided for nursing and expectant mothers and children under school age of working class families at $1\frac{1}{2}d$ a pint, and that the milk should be free where the family income fell below a scale to be determined by the Ministry The deputation proposed that the cheapened supply asked for should be secured by diverting some of the milk now sold for manufacturing purposes at about $5\frac{1}{2}d$ a gallon Sir Kingsley Wood said he was in full agreement with the main objects of the deputation The Government s general policy was to ensure a maximum supply of milk for the consumer consistent with a reasonable remuneration to the producer, to improve the purity of the milk supply and also to continue and where practicable extend their policy of increased consumption of milk among those sections of the population for whom it was of particular value Over 2½ million children were participating in the milk in schools scheme and local authorities had lately been requested to review their arrangements for the supply of milk and food to expectant and nursing mothers and young children They were responding to these suggestions and a number were already extending their provisions At the beginning of 1937, 406 of the 418 maternity and child welfare authorities in England and Wales were supplying milk either free or at less than cost price in necessitous cases to expectant mothers 406 to nursing mothers and 404 to children under five years of age The question of further schemes for the supply of milk either free or at a reduced price for mothers and young children had been under active consideration by the Government in connexion with their long term milk policy He could not anticipate any statement that would be made to Parliament, but he could say that the Minister of Agriculture still hoped it would be possible to make a statement before Parliament rose for the recess

University of Manchester

The Professor Tom Jones memorial surgical fellowship has been awarded to Dr T S B Kelly

University College Hospital Medical School

The Bilton Pollard fellowship has been awarded to Mr Mark Coleman

Central Midwives Board

The offices of the Board are now at 23, Great Peter street, Westminster, London, S W 1 (Telephone Victoria 2410)

St. Mary's Hospital

A dental and research laboratory is to be opened at this hospital through the generosity of Mr E W Meyerstein

Royal College of Physicians of London

The College will be closed from Monday, August 2nd, to Saturday, Sept 11th, both days inclusive

Royal Free Hospital

The A. M Bird post graduate scholarship in pathology has been awarded to Dr Mary Barber, and the Mabel Webb and A. M. Bird research scholarship to Dr Marjorie V Sudds

Lectures on Fractures

A post-graduate course on the modern treatment of fractures will be held at the Royal Infirmary, Bristol, from August 16th to 20th Demonstrations and lectures will be given by Prof E W Hey Groves, Mr K. H Pridie and Mr F W Willway Further information may be had from the director of post graduate studies, University of Bristol, Canynge Hall, Whatley road, Bristol, 8

Post-graduate Course in Paris

A post graduate course on surgical technique in relation to the motor system (bones and joints, &c) will be held in Paris in the medical school of the University from Oct 11th to 28th Prof Ombrédanne and Prof Paul Mathieu will give demonstrations and will operate Further information may be had from the secretary of the Faculté de Médecine

Guy's Hospital

On July 23rd a portrait of Lord Nuffield was presented to Nuffield House, the building for paying patients which he has given to this hospital The portrait was the gift of the artist, Mrs Beatrice Enes

East Surrey Hospital, Redhill

Princess Alice, Countess of Athlone, has consented to open the new nurses' home at this hospital on Oct 27th The total cost of the home is estimated at £13,000 and to meet this over £8000 has so far been subscribed

Middlesex Hospital

The annual prize giving ceremony of this medical school was held on July 21st Prince Arthur of Connaught, chairman of the hospital and medical school, presided and Lord Dawson of Penn presented the prizes and medals to the students and nurses Dr H E A Boldero, the dean, announced that Mr Edward Meyerstein had presented to the school a new athletic ground at Chislehurst Lord Dawson in addressing the students said that this gift would enable the students not only to enjoy recreation but to put themselves in the forefront of a fitter youth No one needed to be fit more than did doctors and nurses Medicine demanded the hardest work and gave the fullest life of any calling in the world Their minds could never be dull in medicine, because they lived in a land of knowledge in which they were always trying to add something from the uncharted land all round The ancillary services, of which the exponents in the Middlesex Hospital medical school were outstanding in repute, were an invaluable aid, but they must be careful to hold the balance between those services and clinical medicine The dean also reported that the medical school had received from an anonymous donor a sum to create a Rudyard Kipling fund to help students or recently qualified Middlesex men who might otherwise have to abandon a medical career Dr G E Beaumont physician to the hospital, delivered an address entitled The Breath of Life

Appointments

BURBURY WINIFRED M M B Lond, D P M Part time Psychiatrist to the Manchester City Council

GILMOUR, MARY D M B Glasg Director of the Marie Curie Hospital London

GREVILLE, G D M.A. Camb Research Biochemist at Runwell Hospital Essex

HILL, H GARDINER, M D Camb F R C P Lond. Physician to St. Thomas's Hospital

JONES EVAN M.D, M.R.C.P Lond., Physician in-charge of Out patients at St. Thomas's Hospital

Ancoats Hospital Manchester—The following appointments are announced —

STEWART T S M B Manch House Surgeon to the Ear Nose and Throat Dept.;

DUNN R. W, M R C S Eng Casualty Officer

BARLOW T E M R C S Eng House Surgeon to orthopædic department and

BACON, W B M B Manch Assistant Surgical Officer to orthopædic department.

Certifying Surgeons under the Factory and Workshop Acts: Dr C. E. McCAUSLAND (Folkestone District Kent) Dr K. A. MACKENZIE (Milborne Port District Somerset) Dr T A. BROWN (Plympton District, Devon), Dr C MACKENZIE (Invergordon District Ross-shire) Dr W C LATHAM (Newton-le-Willows District Lancaster) and Dr R M McMINN (Lydbrook District Gloucester)

Vacancies

For further information refer to the advertisement columns

Aberdeen Maternity Hosp—Sen. R.M O and Reg £200

Aberdeen Royal Infirmary—Surg Reg £200

Adelaide Institute of Medical Science—Neale Research Pathologist £900

All Saints' Hosp., Austral-street S.E—Res H.S., at rate of £100

Bath, Royal United Hosp—Two H.S.s to Spec. Depts. each £150

Bedford County Hosp—H.S at rate of £150

Belfast Royal Maternity Hosp—Two R.M O s each at rate of £.3

Birmingham City—Asst M O for Maternity and Child Welfare £500

Birmingham Selly Oak Hosp—Res Ear Nose and Throat Surgeon. Also Res Gynæcol and Obstetrician, each £700

Bradford City—Asst City Pathologist, £600

Bradford Royal Eye and Ear Hosp.—H.S £150

Brighton and Hove Provident Dental Hospital 7 Buckingham road—Anæsthetist

Brighton Royal Alexandra Hosp for Sick Children—H.P £120

Brighton Royal Sussex County Hosp—Hon Clin Asst to Early Nervous Disorders Dept.

Brighton, Sussex Maternity and Women's Hosp—Res H.S £150

Bristol General Hosp—H.S at rate of £80

Bristol Royal Infirmary, &c—Radio Diagnostician £500

Cardiff King Edward VII Welsh National Memorial Association—Asst. Res M O for North Wales and for South Wales Sanatorium, each £200

Cardiff Welsh National School of Medicine—Jun. Asst in Surg Unit, £450

Carlisle City—Asst. M O, for Maternity and Child Welfare £600

Central London Ophthalmic Hosp Judd-street W C—Asst. Anæsthetists

Cheshire Joint Sanatorium—Res H P., £250

Coventry, City Isolation Hospital—Res. M O, £600

Dover Borough.—Part time Medical Inspector of Aliens at rate of £100

East Ham Memorial Hosp Shrewsbury-road E.—H.P., at rate of £150

Exeter Princess Elizabeth Orthopædic Hospital.—Res. H.S at rate of £150

Glasgow University—Lecturer in Pathological Biochemistry

Grimsby and District Hosp—H P, at rate of £150

Hertfordshire C C—H S for County Institution, £175,

Hull Municipal Maternity Home and Infants' Hosp—Jun. Res M.O, at rate of £100

Ipswich East Suffolk and Ipswich Hospital—H S £144

Keighley and District Victoria Hosp—Second Res M O., at rate of £120

Kettering and District General Hosp—H P, at rate of £150

Kidderminster and District General Hosp—Jun H.S £100

King Edward Memorial Hosp Ealing—H.S to Spec. Depts. Also Cas H.S, each at rate of £150

Lancashire Mental Hospitals Board—Two Med Supts. each £950

Liverpool and District Hosp for Diseases of the Heart—H P £100

Liverpool Sanatorium, Delamere Forest Frodsham—Jun Asst Med Supt £225

Manchester Crumpsall Hosp—Res Asst M O at rate of £200

Manchester Ear Hosp Grosvenor-square, All Saints.—Res H.S £120

Manchester Northern Hosp Cheetham Hill road—Res Surg O., £150

Manchester Royal Children's Hosp Pendlebury—Asst M O and Res. M O., each at rate of £150 Also Res H.S at rate of £100

Manchester Royal Infirmary—Asst M O to Massage and Electrical Dept £100

Metropolitan Hosp Kingsland road E—Cas. O and Res Anæsthetist £100

Middlesbrough North Riding Infirmary—Third H.S., at rate of £110

Mount Vernon Hosp Northwood—Asst H.S., £150,

Northampton County Borough Education Committee—Asst School Dentist £450

Northampton General Hosp—Cas O., at rate of £150

Oldham, Municipal Hosp—Res. Asst M O at rate of £200

Plymouth Prince of Wales's Hosp, Greenbank-road.—Res Anæsthetist and H S. to Spec. Depts. at rate of £120

Preston and County Lancaster Royal Infirmary—H.S to Eye Ear Nose and Throat Dept. at rate of £150

Princess Louise Kensington Hosp for Children St Quintin avenue W—H.S., at rate of £120–£150

Queen's Hosp for Children, Hackney-road E—Cas. O at rate of £100

Radcliffe Infirmary—Records Officer £350 to £400

Rochdale, Birch Hill Hosp—Jun Res. M O., at rate of £225

Rochdale Infirmary and Dispensary—H P also Second H.S each at rate of £150

Rotherham Hosp—H.S for Ophth and Ear Nose, and Throat Depts., £150

Royal Northern Hosp., Holloway N—H P and Obstet H.S each at rate of £70

Ryde, Royal Isle of Wight County Hospital.—Hon Surgeon to Ear Nose and Throat Dept. Hon. Pathologist also Jun H.S., £120

St John's Hosp Lewisham S E—Res. H P at rate of £100 Also Med Reg to Out-patient Dept 50 guineas

Salvation Army Lower Clapton road, E—Hon. Physician to Mothers Hospital

Sheffield Children's Hosp—H.S., £100

Sheffield Royal Infirmary—Cas O at rate of £150

Shoreditch Metropolitan Borough—M O.H £1000

Southampton Children's Hosp and Dispensary for Women—Res. M O, at rate of £150

Southampton, Royal South Hants and Southampton Hosp—Cas O and Res Anæsthetist and H.S. to Ear Nose and Throat Dept., each at rate of £150

Southend-on-Sea Infectious Diseases Hosp—Med Supt £750

Stoke-on Trent Longton Hosp—H.S, £160

Sunderland County Borough—Asst School M O £600

Swansea County Borough Mental Hosp—Asst M O £400

Swansea General and Eye Hospital—H.S. at rate of £130

Taunton and Somerset Hosp—Sen R.M.O at rate of £200

University College W C—Galton Laboratory Asst. Serologist £350

University of London W C—William Julius Mickle Fellowship £200

Ventnor Royal National Hosp for Consumption &c—Second Asst Res M O, at rate of £200

Wakefield Clayton Hosp.—Two H.S.s each £200

Watford and District Peace Memorial Hosp—H.S., at rate of £150

Weir Hosp Grove-road, Balham S W—Sen and Jun Res M O s, £250 and £150 respectively

West End Hosp for Nervous Diseases 73 Welbeck-street W—Hon Psychotherapist.

Weston-super-Mare General Hosp.—Res. H P £150

Wimbledon Hosp Thurstan-road S W—Res. M O at rate of £150

Worcestershire Mental Hosp., Barnsley Hall—Second Asst M O £350

Births, Marriages, and Deaths

BIRTHS

ANDERSON—On July 23rd the wife of Dr James Mitchell Anderson of a daughter

FREEMAN—On July 17th at Gloucester the wife of Dr John David Freeman, of a daughter

MILLER.—On July 23rd at Lower Clapton road London E the wife of Dr Edin Miller, of a daughter

PENDRILL CHARLES.—On July 21st at Bentinck-street the wife of Dr Gilbert Pendrill Charles of a son

MARRIAGES

LYTTON—PICKEN—On July 23rd at St Paul's Herne Hill, S.E Dr Leslie Lytton of Portsmouth, to Joan, elder daughter of Prof. and Mrs. Ralph Picken Cardiff

DEATHS

FFRENCH—On July 25th Ernest George Ffrench M D F R.C.S. Edin. Lt-Col R.A.M C. (retd) of Harley street in his 61st year

MURRAY—On July 21st, at Llandrindod Wells, John Murray O.B E M B C.M Glasg

WADD—On July 27th, 1937 at 14 Glenmore House Richmond Hill Surrey Harry Randall Wadd M R C.S. L R.C P Lond Cremation at Golders Green to-day Friday July 30th 1937 at 12.30 P M

WALKER.—On July 18th at Manchester Edward J Walker, M D Q U Belf of Edale, Derbyshire and late of Manchester and Chapel-en le-Frith aged 7

N B—A fee of 7s. 6d is charged for the insertion of Notices of Births Marriages and Deaths.

Medical Diary

LECTURES ADDRESSES DEMONSTRATIONS &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL Ducane-road W

WEDNESDAY August 4th—3 P M clinical and pathological conference (surgical)

THURSDAY—3 P M gynæcological endocrinology

FRIDAY—3 P.M clinical and pathological conference (obstetrics and gynæcology)

Daily 10 A.M to 4 P M medical clinics surgical clinics and operations obstetrical and gynæcological clinics and operations

NOTES, COMMENTS, AND ABSTRACTS

A CLOSE SHAVE

It has been affirmed, on meagre authority, that man's earliest attempts at shaving consisted in rubbing his face vigorously with pumice stone. From this practice to the use of the modern safety-razor is a far cry almost justifying belief in progress. Nevertheless, the sensitive skinned will be reluctant to admit that shaving technique has, as yet, reached anything like perfection, for, whereas to the thick-skinned shaving may be no worse than a bore, to the sensitive it is little better than a torture. L. Hollander and E. J. Casselman have recorded their observations made in a shaving clinic established at Mellon Institute in 1931 (*J. Amer. med. Ass.* July 10th, 1937, p. 95). Their staff consisted of 10 to 15 experimental shavers, all scientists who, under the direction of Casselman, daily shaved a group of 31 victims of whom 20 were blond and 11 brunette. Five blonds and 6 brunettes had unusually coarse beards, while 9 blonds and 3 brunettes had rather light growths; but it was found that skin sensitivity was not confined to those with dense beards. Dull blades, incompletely softened hairs, and incorrect shaving angles were found to be the main causes of bad shaving. The shaving angle is that formed by a line passing through the central plane of the blade near its edge and a plane passing through the edge and tangent to the guard bar. To obtain the most effective shaving angle an alteration of a few degrees was sometimes necessary. Other subsidiary causes of bad shaving were insufficient lubrication of the blade, lack of a stiff supporting medium for the hair-shaft, and failure to protect the skin from trauma or to make use of the antiseptic action of soaps.

To be shaved successfully, the face should first be thoroughly washed with hot water and soap and rinsed. One's favourite shaving soap or cream should then be thoroughly rubbed in with plenty of hot water. These two operations should occupy from 2½ to 3 minutes. The razor should be wetted before use and both razor and face should be kept wet during the shave. The most difficult parts to shave, the upper lip and the central portion of the chin, should be left till last to allow them longer contact with water. At the end of the shave a lotion or post shaving preparation of some kind can be used after all soap has been thoroughly rinsed off the face. Shaving, in addition to removing hair, removes also a fair quantity of epidermis. After-care of the face includes the control of bleeding, an antiseptic and astringent action on the skin, and the replacement of the protective covering lost by the removal of sebum and epidermis. Bismuth subgallate, a powder, is recommended as the best styptic, ethyl alcohol in various strengths with 4 per cent. salicylic acid as an antiseptic, and talcum powder as a protective covering. These measures are to be commended to the sensitive-skinned who should, however, bear in mind that, if they are made comfortable thereby, they will be robbed of what may well be their favourite topic of conversation.

A PHYSICIAN'S VERSES

Dr. T. Wilson Parry's new book of poems [1] reveals him both as doctor and antiquarian. It takes its name from the first section, entitled Immortal Names, and this comprises sixteen sonnets on great subjects from Æsculapius to Joseph Lister, informed by knowledge and inspired by an ideal. For medicine to Dr. Parry is more than a trade, more than a profession; and in this book he presents a continuing tradition of greatness through service to mankind. This is the fruit of his travels into history, but he is also a geographical traveller, and another group of sonnets provides some charming word pictures of the European scene. The third group, entitled The Quest Eternal, records travels in the mind, while the fourth and fifth are mostly the result of travels in fancy, some of them pleasantly reminiscent of Dr. Parry's previous book, "Dream Fairies." It is perhaps, indeed, in his lyric mood that his verses are happiest, and though the series of sonnets of history and landscape have memorable lines it is inevitable that they should sometimes lack the spontaneity of his best. As idealist and poet Dr. Parry is naturally an individualist, and when he descends to political verse we find him looking forward without enthusiasm to the time when there are no more family physicians to look after their patients. "To the Borough Health Department they are now obliged to 'phone, For a surgeon or physician who to them is quite unknown." Let us hope things will never be quite as bad as that!

AN APPEAL FOR MEDICAL BOOKS

Dr. Hope Trant, acting medical officer of the Mwenzo Mission Hospital (P.O. Isoka), Northern Rhodesia, writes: "Among your readers there are probably many who take a pride in keeping their medical libraries up to date, or who for various reasons must keep abreast of the latest developments. May I ask these, when they are replacing their older editions with newer ones, to be so kind as to put aside the older ones for us?

"The Livingstonia Mission, to which this hospital belongs, has a chain of native hospitals in Northern Rhodesia and Nyasaland. They are run on pitifully small grants ranging from £40–£200 per annum, and, as the medical missionaries' salaries are also very small, there is little or no money for the purchase of new medical books. On isolated stations, medical works are our consultants and guides, and if these are antiquated and out of date, so will our practice become.

"If therefore any of your readers would be kind enough to send us, by book post to the above address, medical books of any kind, but preferably not older than 1926, they would earn our heartfelt thanks. Should duplicates be received, they will be passed on to another station."

The Academic Depôt (Mappin House, 156, Oxford-street, London, W.1) have sent us samples of their surgical hose which are made from Lastex Yarn. The stockings are seamless and fully fashioned and in appearance are not unlike closely woven lisle stockings. The elastic core of the yarn however gives them unusual resilience, so that they can be used to exert continuous firm pressure on varicose veins. The makers claim that the hose are invisible under ordinary silk stockings, that they are cool and ventilated, and that they will stand up to repeated washing. They are supplied in two styles (knee length and full length) and each style may be had in three stock sizes. They will also be made to measure. The patented heel of loosely woven cotton thread is said to ensure a correct anatomical support, and it should certainly add to the comfort of the stocking.

INDEX TO "THE LANCET," Vol. I, 1937

The Index and Title-page of Vol. I, 1937, which was completed with the issue of June 26th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of The Lancet, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

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[1] Immortal Names and other Poems. By T. Wilson Parry, M.A., M.D. Cantab., F.S.A. London: The Mitre Press. 1937. Pp. 122. 5s.

ADDRESSES AND ORIGINAL ARTICLES

THE ARTERIAL PULSE IN HEALTH AND DISEASE*

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II —The Pulse wave

THE problems with which I dealt in my first lecture were chiefly clinical. I now wish to approach the subject from the physical standpoint

ITS REPRESENTATION

We speak of the pulse *wave* but we think of the pulse not as a wave but as an impact Our physical conception of a wave is based on three things—its relations in space its relations in time and its pressure In these days of wireless the terms wave length and wave frequency are familiar to everyone. Wave length refers to the relations of the wave in space and wave-frequency to its relations in time Wave pressure determines the size and shape of the wave The spacial, temporal, and pressure relations of a wave can all be shown simultaneously by the cinematograph; but, of the three two only can be represented at one time in a still picture such as a lantern slide

We are accustomed to think of the pulse as we feel it on palpation or as we see it recorded in the sphygmogram (Fig 19). The sphygmogram is a graphic record of the pressure-time relations of the different elements of the pulse wave at a particular point in the body the point usually chosen being the radial artery at the wrist. If one were to record the upward and downward movements of a seagull riding the waves one would obtain a record of the sea waves comparable to a sphygmogram. But we never think of the waves on the sea in that way We think of them as they appear in a painting or in a photograph There they are represented not as a pressure-time relation at a particular point but as a pressure-space relation at a particular instant of time In the seascape we have eliminated time; in the sphygmogram we have eliminated space

THE PULSE WAVE IN SPACE

I want you to think of the pulse-wave as you think of a wave on the seashore I want you to visualise it as a material wave extending along the brachial artery Suppose that we could do to the pulse-wave what Vesuvius did to the inhabitants of Pompei, arrest and fix it instantaneously as it was in life We should then be able to study at leisure the pressure conditions which had pertained throughout the artery at the moment of fixation. Such an experiment is obviously impracticable; we cannot fix the pulse wave We cannot ascertain the pressure-space relations of the wave by direct observation; but we can do so by calculation

We speak of the highest point of a wave as the crest and the lowest as the trough The part which stretches from the trough of one wave to the crest of the next we call the wave front

Just as the surface of a curved mirror may be regarded as consisting of an infinite number of plane facets so the wave front may be considered as being composed of a large number of small elements Each of these elements has a certain individuality The behaviour of a particular element may be studied independently of that of its fellows although the behaviour of the wave front as a whole depends on the combined behaviour of all the elements of which it is composed The radial sphygmogram tells us the pressure time relations of different elements on the wave front at the wrist and, from direct experiment we know the rate at which the pulse wave travels. It is therefore a simple matter to calculate the distance which different elements have travelled by the time they reach the wrist Let me give you an example

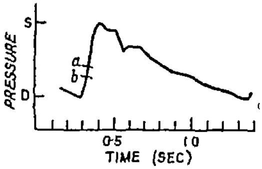

FIG 19 —Carotid sphygmogram S—systolic pressure D—diastolic pressure

In the sphygmogram shown in Fig 19 elements in the neighbourhood of the crest of the wave are launched on the blood stream at a pressure near to the systolic pressure which in this particular patient was 130 mm. those in the vicinity of the trough at a pressure approximating to the diastolic pressure which was 80 mm From the experiments on pulse wave velocity in isolated arteries to which I referred in my first lecture we know the velocity of the pulse wave at these pressures It is 13 and 7 5 metres per second respectively Hence if the pressure gradient were smooth, the mean velocity of the wave front as a whole would be 10 m per sec and since 0 1 sec. is the time interval separating the crest from the trough, the length of the wave front would be 10 by 0 1 m.—i.e 1 metre In other words elements on the wave front represented by points at the top and bottom of the upstroke of the sphygmogram are separated from one another by a distance of approximately 1 metre

In a man of average stature this is slightly greater than the distance from heart to wrist That is to say in the case of the upper limb when the crest of the pulse wave is launched upon the blood stream in the aorta, the front of the wave has already reached the wrist. Such a calculation is only approximate for the pressure gradient on the wave front is not smooth and as I said in my first lecture the range of normal variation in pulse wave velocity is considerable This calculation however does serve to give one some idea of the form of the pulse wave in space

CHANGE IN FORM OF THE PULSE WAVE DURING TRANSMISSION

Having conceived the idea of the pulse-wave as a material wave extending along the course of a segment of the arterial system let us now go a step farther and watch it in motion as it travels from heart to periphery Let us see how the wave front changes in shape in the course of transmission

The shape of the wave front and the change which it undergoes are determined by various factors Of these the most important are the output of the heart the rate at which the blood is ejected from the ventricle and the diastolic pressure This is a complicated problem, and, in order to ascertain the effect of these different factors, it is convenient to study wave transmission in an artificial schema of the circulation. This gives us direct control of each of the factors concerned and so enables us to analyse the complex effects produced by their combined action.

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* The Lumleian lectures delivered at the Royal College of Physicians on March 9th and 11th 1937 Lecture I appeared last week.

In the schema which I propose to describe, the artery was represented by the inner tube of a bicycle tyre, closed at both ends. It contained fluid, but no air. A suitable pump was devised for generating waves in fluid, and sphygmograms were recorded at different points along the course of the tube. By this means it was possible to study the change in form which the pulse wave underwent as it passed down the tube.

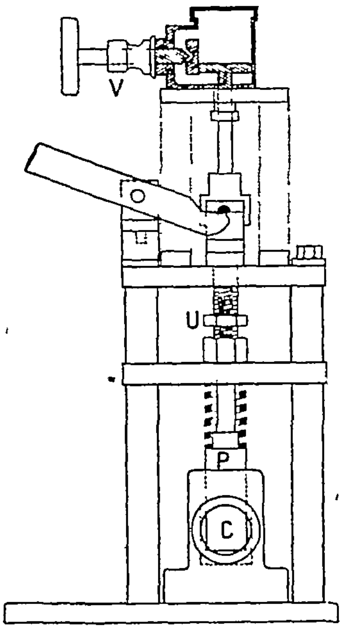


FIG 20.—Pump as seen from the front in part section. (For description see text.)

The pump (Fig 20) consisted of a metal cylinder (C) fitted with a vertical plunger (P). Its output was determined by the length of stroke of the plunger which could be varied by an adjustable nut (U). The rate of ejection depended on the velocity of the stroke of the plunger, which was controlled by an oil valve (V). The initial pressure of the fluid in the tube (which corresponds to the diastolic pressure in the arteries) could be adjusted by altering the height of the reservoir from which it was fed. Thus we were able to vary at will, and independently of one another, the different factors which determine the form of the wave front.

Sphygmograms were recorded either by a lever attached to the upper surface of the tube, and writing on a smoked drum (Figs 21 and 22) or by a beam of light thrown across the tube through a slit, so that the moving upper surface of the tube cast a shadow on a photographic plate (Fig 24). Fig 21 shows the results of a typical experiment. Throughout this experiment, all the conditions were kept constant, and sphygmograms were recorded at different points along the course of the tube. Thus we were able to study the change in form which the wave front undergoes in the course of transmission.

Close to the proximal end of the tube (Fig 21 A) the record obtained is not unlike a clinical sphygmogram. Its upstroke rises cleanly from the base line. A few centimetres farther down the tube a remarkable thing happens. A small dip (n_1 in C) appears *in front* of the upstroke. As the wave travels down the tube this dip deepens, and at the same time the upstroke becomes steeper. These changes are progressive throughout the first 25 cm of the tube. Then they are suddenly reversed. The upstroke becomes less steep, the negative wave becomes less deep, and a positive wave (p_1 in E) is shot out in front of the negative wave. As it passes down the tube this daughter wave increases in size. Eventually it becomes as tall as the parent wave. 40 cm down the tube, a dip (n_2) appears in front of the daughter wave. This grows deeper as the front of the daughter wave becomes more steep, until at 80 cm the changes are again reversed and another positive wave (p_2) is shot out in front of the daughter wave.

Thus the changes which the daughter wave undergoes in the distal part of the tube are merely a repetition of those which the parent wave underwent in the proximal part. The second positive wave (p_2 in O) might be called the grand daughter wave, since it bears the same relation to the daughter wave as does the latter to the parent wave.

Let us now return for a moment to the parent. After giving birth to the daughter wave at 30 cm the wave front once more tends to become steeper and a second daughter wave (*a*, Fig 21K) is shot out. This fuses with the first daughter wave (*b*). The birth of the daughter and of the grand daughter waves are events of great importance in the life of their respective parents. For, as I shall show later, they serve to restore their stability, and thereby give them a new lease of life.

Before leaving the artificial schema, there is one other point to which I must refer. If we raise the pressure in the tube by elevating the reservoir, the development of the changes which I have described is retarded. That is to say the parent wave has to travel a greater distance before giving birth to a daughter wave. At high pressures these changes are not merely retarded but abolished. The parent wave then travels the whole length of the tube without changing its form. This is a most important point to which I shall refer later.

The influence of pressure on the form of the pulse wave is shown in Fig 22. All these sphygmograms were recorded at the same point on the tube (60 cm from the proximal end), but the pressure was different in each record. At the highest pressure the record was of simple form, but as the pressure was reduced it became more and more complex. At 30 mm pressure the daughter wave (p_1) was well developed and at 15 mm the grand daughter wave (p_2) was present. This shows that the distance which the pulse wave has to travel before giving birth to a daughter varies inversely with the pressure. Lowering the pressure produces changes in the sphygmogram at a given point on the tube similar to those observed at successive points along the course of the tube when the pressure is kept constant. Thus, in the development

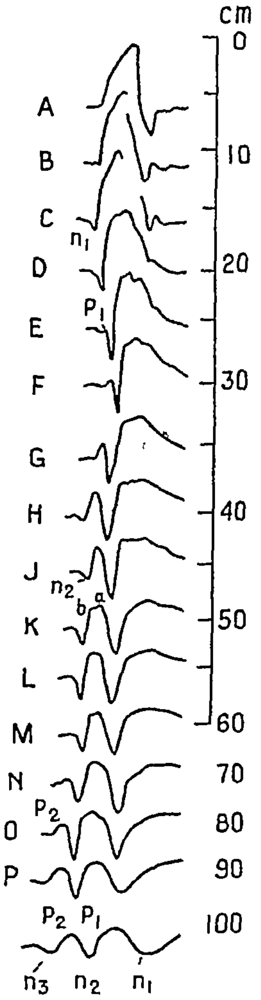


FIG 21.—Series of sphygmograms all taken at the same pressure but at different distances varying from 5 to 100 cm from proximal end of tyre.

of these pre-anacrotic waves pressure and distance are interchangeable and one can plot a curve showing the relation between them In Fig 23 at distances and pressures the coördinates of which lie above and to the left of the curve the sphygmogram is of simple form while below and to the right of the curve pre-anacrotic waves are present For example at a pressure of 30 mm pre-anacrotic waves will appear before the main wave has travelled 20 cm whereas at a pressure of 50 mm they will not appear until it has travelled 70 cm and at 60 mm pressure they will never appear at all the wave retaining its original form until it is eventually damped out.

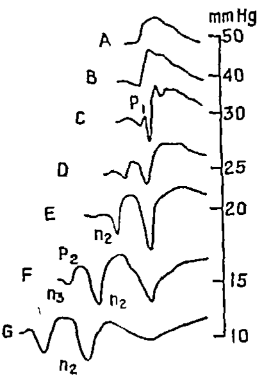


FIG 22.—Series of sphygmograms similar to Fig 21 all recorded at 00 cm from end of tyre, but at different pressures varying from 10 to 60 mm.

INSTABILITY OF THE WAVE FRONT

Let us now leave for a moment the artificial schema and return to the living body The fact that the upstroke of the sphygmogram may be preceded by small vibrations similar to those which I have just described was first discovered by Erlanger He found these vibrations in records taken from dogs He was, however unable to account for their presence and the mode of their production remained a mystery

The first step towards the solution of this problem came from some observations which Hill and I had made (1023) in man We had shown that, on purely mechanical grounds under certain conditions, portions of the front of the pulse wave might be expected to become unstable This would give rise to a turbulent condition in the blood stream with rapid oscillations of pressure in the arteries We found that, when these hypothetical conditions were satisfied in the living body anacrotic vibrations did appear in the sphygmogram

It seemed possible that Erlanger's pre-anacrotic vibrations were produced in a similar way and, with a view to throwing further light on this problem I (1925) carried out the experiments which I have described to you when I was working in Erlanger's laboratory in St. Louis in 1923

Before describing in detail the mode of development of the pre anacrotic waves I must refer once again to waves on the seashore Most of us I imagine still find a certain childish delight in watching waves breaking on the beach. There is a peculiar fascination in following a great wave as it mounts higher and higher and then suddenly with a roar dashes itself to pieces The mechanics of this phenomenon are familiar to all. As the wave approaches the shelving beach its lower surface is retarded by friction on the underlying sand The crest of the wave being free to move in the air travels more quickly than the trough The wave front becomes steeper then concave and eventually unstable It loses its balance and crashes over

What happens to a wave on the seashore happens also to the pulse wave The pre-anacrotic waves that I have described are the breakers on the beach

Let us now consider how these arterial ' breakers develop As I explained in my first lecture, the velocity at which the pulse-wave travels varies with the tension of the arterial wall, and the tension of the arterial wall is determined by the pressure of the blood within the artery In our experiments on isolated arteries we showed that, at a diastolic pressure of 50 mm the pulse-wave velocity is about 5 m per sec. whereas in the same artery at a diastolic pressure of 100 it is about 10 m per sec and at a diastolic pressure of 150 it is over 15 m per sec

These observations all referred to the rate of transmission of elements in the extreme front of the pulse-wave—i.e close to the trough of the wave But, as the ventricle discharges its blood the pressure in the aorta rises and, by the time that elements near the crest of the pulse wave are launched upon the blood stream the pressure in the aorta is approaching the systolic level. Consequently elements near the crest of the wave travel more quickly towards the periphery than those near the trough Hence the front of the pulse wave like that of the wave on the seashore tends to become steeper as it approaches the periphery In fact, portions of the wave front may become so steep that their condition is unstable This entails a redistribution of energy

Exactly what will happen is difficult to foretell In the case of a wave on the seashore when the wave front becomes unstable it crashes over with the formation of breakers. In a closed system such as an artery which contains fluid but no air the formation of actual material breakers cannot take place. There is nowhere for them to break. It is however possible to imagine in terms of mechanical pressure instead of material water the occurrence of some phenomenon closely analogous to the formation of breakers Such a phenomenon would give rise to a turbulent condition in the blood stream and would manifest itself by rapid *oscillations of pressure*

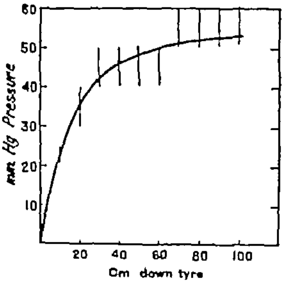


FIG 23 —Diagram of relation between pressure and distance which determines appearance of pre-anacrotic waves

Let me give an example The four sphygmograms shown in Fig 24 were taken under similar conditions at different points along the course of the tube in our artificial schema They illustrate the changes that I have described As the wave travels down the tube a dip *appears in front of* the main upstroke and a daughter wave is given off. For convenience I have outlined these four records in Fig 25*b* The shaded areas represent the pre anacrotic waves I then calculated the form which the front of the pulse wave would assume at these different points if it were able to travel down the tube without losing its stability (Fig 25*a*)

When the observed sphygmograms are compared with those calculated it is apparent that the pre anacrotic waves first appear in the neighbourhood of that point in the tube where part of the front of the pulse wave would be expected to become unstable (Fig 25 II) Secondly, the degree of development of the pre-anacrotic waves (as represented by the shaded areas in Fig 25 *b*), at different points along the tube, corresponds to that which might be anticipated on theoretical grounds At 5 cm, where a small part of the calculated wave front *is almost vertical, there is a small dip below the base line*, at 15 cm, where a large part of the upstroke of the calculated sphygmogram has passed beyond the vertical, the pre anacrotic dip is much deeper, and at 30 cm, where on mechanical grounds one would have anticipated a gross disturbance in the artery, a daughter wave has appeared

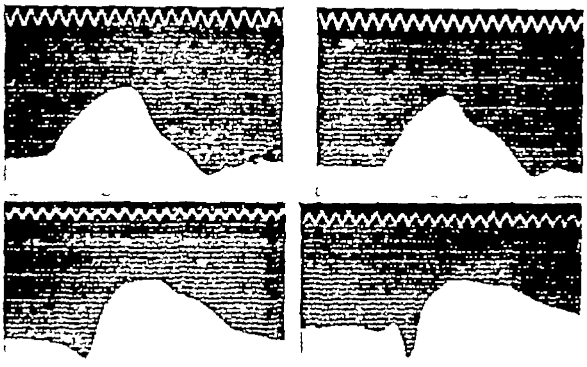


FIG 24 —Shadow sphygmograms of waves recorded at different points along the course of the tyre (10–40 cm from the proximal end) in which the initial pressure was 22 mm Hg Tuning fork marking 100 double vibrations per second

These observations indicate that, when portions of the front of the pulse wave do become unstable, stability is restored by a redistribution of energy, part of the energy of the main pulse wave being transferred to a daughter wave, which is shot out in front These waves are analogous to the breakers on the beach.

On mechanical grounds it is probable that in addition to the pre anacrotic daughter waves, other daughter waves are shot out in the opposite direction These would fuse with the main pulse wave, and would consequently be more difficult to recognise

"BREAKERS" IN ARTERIES

I may have seemed to have strayed a long way from clinical medicine I will therefore now turn to "breakers" within the arteries of living man Breakers will only appear when a large part of the wave front becomes unstable The likelihood of this occurring depends on two things (1) the steepness of the wave front in the aorta, and (2) the added steepness which it acquires in the course of transmission to the periphery

The steepness of the wave front in the aorta depends on the stroke volume of the ventricle and on the rate of ejection of its contents In a patient with aortic stenosis, for example, the pressure gradient along the front of the pulse wave is so gradual that there is no possibility of breakers developing In a patient with free aortic regurgitation on the other hand, the pressure gradient in the aorta is already so steep that parts of the wave front are bound to become unstable in the course of transmission to the periphery

In order that the wave front may become unstable in the course of transmission, the elements which are travelling more quickly must catch up on those which are travelling more slowly It is the same problem which one has to solve in handicapping runners for a race There the object which we have in view is to enable the faster man to draw level with his opponent as he reaches the tape The handicap is based on two things, the difference in speed of the runners and the length of the race

Let us consider the case of a small element *ab* on the front of the pulse wave (Fig 19) The race is from heart to periphery The runners are the two points *a* and *b* at the ends of the element in question, *a* runs faster than *b* The handicap is the distance separating *a* from *b* on the wave front

Unless *a* runs much faster than *b* *the handicap—i e, the length of* the element *ab*—must not be too big, for the race is short, and *a* will *fail to catch b before he reaches* the periphery

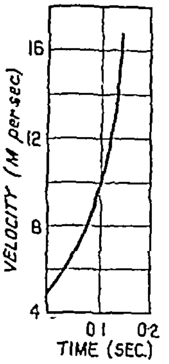


FIG 26 —Calculated velocity time curve of upstroke of a hypothetical sphygmogram all parts of which would become unstable at the same instant.

The relation between speed, handicap, and distance can be expressed very simply as follows —

If v_1 and v_2 cm per sec are the velocities at which *b* and *a* are travelling, the difference in velocity between them is $(v_2 - v_1)$ cm per sec, and the mean velocity of the whole element *ab* is $\left(\frac{v_2 + v_1}{2}\right)$ cm per sec But *a* and *b* are separated by a time interval *t* seconds Hence the length of the element *ab*—i e, the handicap—is $t\left(\frac{v_2 + v_1}{2}\right)$ cm and the time required for *a* to catch up *b* is

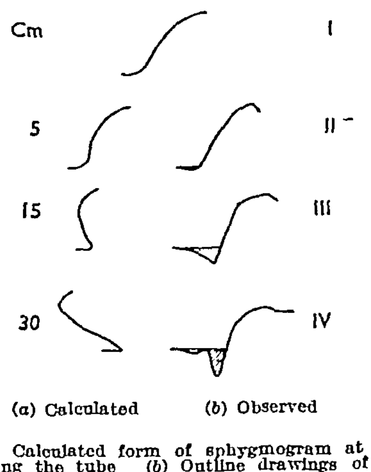
$$t\left(\frac{v_2 + v_1}{2}\right) \Big/ v_2 - v_1 \text{ secs}$$

—i e, the handicap divided by the difference in speed of the runners The distance which the element will travel in this time is

$$t\left(\frac{v_2 + v_1}{2}\right)^2 \Big/ (v_2 - v_1) \text{ cm}$$

—i e, the time *a* takes to catch *b* multiplied by the mean velocity of the element *ab*

If this distance be less than the distance from heart to periphery, the element *ab* will become vertical, and consequently unstable, in the course of transmission, and breakers will be formed



(*a*) Calculated (*b*) Observed

FIG 25 —(*a*) Calculated form of sphygmogram at different points along the tube (*b*) Outline drawings of shadow sphygmograms given in Fig 24 Shaded areas represent pre-anacrotic waves

The larger the element which becomes unstable the greater will be the resulting disturbance in the artery when the wave front passes from the stable to the unstable condition When a large part of the wave front suddenly becomes unstable the vessel walls are subjected to a very severe shock. This may occur in the living body and is, I believe an important factor in producing the features characteristic of the water hammer type of pulse. It is possible to calculate theoretically the form of a wave the front of which would in its entirety become unstable at the same instant I need not trouble you with the mathematics of this calculation but plotted graphically the form of the wave front is shown in Fig 26

It is striking that in their initial portions carotid sphygmograms obtained from cases of free aortic regurgitation in which there is a fully developed water hammer pulse are often very similar in form to the initial portions of the hypothetical curve given in Fig 21

THE WATER HAMMER PULSE

I have already referred to the observations of Feil and Gilder (1921) on aortic incompetence In their paper they call attention especially to two abnormal attributes of the pulse in this condition (1) the unusually abrupt upstroke and (2) the occasional presence of rapid oscillations on the upstroke or plateau constituting a brief thrill They point out that the water hammer character of the pulse is due to the unusual abruptness of the upstroke; and that the thrill consorts almost if not entirely with pulses in which the upstroke is of extremely brief duration

In patients with aortic incompetence the steep pressure gradient along the front of the pulse wave in the aorta, together with the low diastolic pressure in the peripheral arteries has generally been accepted as a sufficient explanation of the abruptly rising character of the pulse The explanation of the thrill originally suggested by Corrigan (1832) was that the flaccid vessel walls are set into vibration by the current of blood rushing through the relatively empty arteries. This hypothesis does not appear ever to have been contested

That the abnormal steepness of the wave front, as it leaves the aorta will tend to produce a rapidly rising pulse and that the flaccid arterial walls will very easily be set into vibration is beyond dispute; but the experiments which I have described to you to-day suggest that another factor is partly responsible for these peculiar features—namely the change in form which the wave front undergoes in the course of transmission In this condition the wave front is already steep in the aorta but it becomes still steeper before reaching the periphery

If the vibrations which constitute the thrill were due simply to a sudden stretching of the arterial walls by the front of the pulse wave they would occur after and not during the main upstroke; whereas if they be produced by the formation of breakers in the arteries their mid-anacrotic position is easily explained

I have already referred to the occurrence of rapid anacrotic vibrations in the human sphygmogram in conditions other than aortic regurgitation Physiologically the sphygmogram from a normal healthy individual does not show such vibrations except after violent exercise but in disease they are of comparatively common occurrence Such turbulent motion of the front of the pulse wave would not be likely to occur under ordinary circumstances If, however the diastolic pressure be low or if the pressure gradient along the wave front be unduly steep the probability of parts of it becoming unstable before reaching the periphery will be greatly increased.

Wiggers (1923) has called attention to the fact that rapid pressure vibrations occur in the innominate artery of dogs while they are absent from simultaneous aortic records He believed that these vibrations were produced by the rebounding of blood in the subdivisions of the aorta I would suggest that it is much more probable that they are due to certain portions of the wave front which were stable in the aorta having become unstable in the course of transmission to the innominate artery

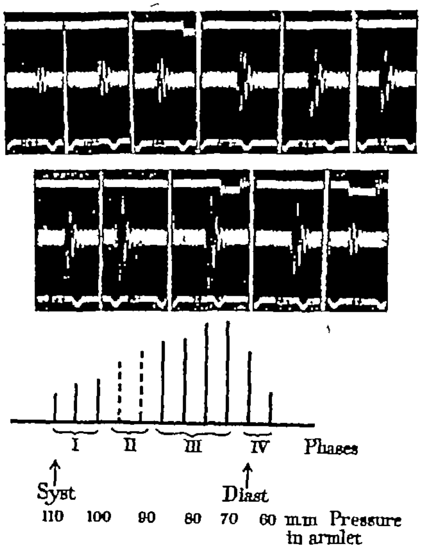


FIG 27.—The Korotkow sounds recorded graphically during decompression The diagram shows the amplitude of the sound vibrations in different cycles.

Clinically there is a striking similarity between the pulse of early aortic incompetence and that of exophthalmic goitre profound anæmia advanced arteriosclerosis and certain other conditions This is especially noticeable in the sensation conveyed to the finger by the carotid pulse The quickened stroke and forcible beat of the overacting heart in exophthalmic goitre simulate very closely the conditions in normal healthy individuals during and immediately after severe physical exertion It is not surprising therefore, that in this disease the carotid sphygmogram occasionally exhibits rapid anacrotic vibrations similar to those that occur in aortic regurgitation

I will summarise this part of the subject by saying that the water hammer type of pulse is not peculiar to aortic incompetence It may be present in the other conditions that I have mentioned The features characteristic of this type of pulse are in part attributable to the increase in steepness which the wave front acquires in the course of transmission and to the development of breakers in the arteries

(*To be concluded*)

THE TRANSFUSION OF STORED CADAVER BLOOD

By Prof W N Shamov
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It is well known that the death of an animal by no means involves a simultaneous death of all its tissues and organs. For instance, the muscles removed from the body of a recently killed animal remain contractile for several hours , other examples include the heart, the blood vessels, and the endocrine glands. Death, therefore, is only the moment of destruction of an intricate complex of connexions and mutual relations between the separate tissues of an organism, which retain their full vitality and function for a varying time. This time depends chiefly on how far the artificial conditions are able to satisfy their fundamental requirements of nutrition and the removal of the products of metabolism. The most elementary of these conditions are shown by tissue cultures, which may grow in vitro for an unlimited time so long as they are periodically washed and transplanted on new nutritive media. But the vitality of such organs as the heart requires for its support a very much more complicated environment which it is difficult to create artificially, and they can exist in vitro for only a comparatively short time. The ideal conditions, of course, would be found only in another living organism where all the processes of nutrition and metabolism are accurately regulated. A good example of this is given by blood transfusion, where the blood of one animal after long preservation in vitro can be successfully transfused into another, and continue to accomplish all its fundamental functions.

From this an extremely interesting question arises. Could not some tissues or organs from the dead body be transferred to the living and continue to function normally? Can a defect in a living body be remedied by the transplantation of tissue from the dead, already doomed soon to perish? The solution of this problem would not only be of the greatest biological interest but might also disclose wide prospects for practical surgery.

PRELIMINARY EXPERIMENTS

As the object of my first researches in this direction I selected the blood, since more is known about the method of its transference, and all the destructive processes that develop after death have a greater influence on it than is the case in any other tissue. Against this there is the weighty objection that an abundant bacterial flora may enter the blood stream even during the last agony, and that, moreover, it must contain a great quantity of toxic substances as the result of death and the autolysis of tissues. But these a priori objections, though logical, need scientific support, and I therefore arranged three series of experiments. I must own that on approaching our researches I thought it hardly probable that the blood from a dead body could be introduced with impunity into the blood system of a living animal. Our notions of death suggested a whole series of acutely toxic substances entering the blood, which must be fatal to any living organism.

The first series of investigations, conducted under my direction by Dr Kostiukov in 1927, consisted of systematic bacteriological examinations of different tissues and organs taken from animals at varying intervals after their death, and with varying conditions of storing the dead bodies.

In all, 402 examinations were made of tissues and organs taken from the cadavers of 47 animals, killed in different ways and kept at temperatures of 4°–22.5° C at a time ranging from 15 minutes to 12 days after the death of the animal.

These investigations have shown us that the development of infection in any tissue of the dead body depends upon two factors. The first is the nearness of the given tissues or organs to the chief focus of infection—in healthy animals the gastro-intestinal tract, whence it spreads rapidly by the portal system to the abdominal organs , the farther from the gut the organ the later it is infected. If there are other foci, infection from these will also proceed parallel with that from the intestine. The second factor is the temperature at which the cadaver is kept. In the most favourable conditions for preservation—about freezing point—the tissues nearest to the focus of infection begin to be infected after 10 days. We found this in the peritoneal exudate, the peritoneum itself, and the liver, while the sterility of the tissues further away from the abdominal cavity—brain, muscles, joints, marrow, and heart blood—is preserved for 12 days and more. Even under less favourable conditions these latter remain sterile at 14° C for 60 hours, while after 24 hours at 22° C only the bones and marrow are sterile.

Consequently, we can conclude that, contrary to all supposition, the development of infection in certain organs of the dead body takes place rather late—at an appropriate temperature approximately 10 days after death—and therefore surgeons may boldly make use of material from a dead body not only some hours but even some days after death.

The second series of experiments, to determine the toxicity of blood from a dead body, Dr Kostiukov and I carried out in 1929. Appropriate experiments were made on 15 dogs with which 10 experiments were made, with different modifications.

The technique of the experiments was generally as follows.

A dog was killed after measuring its weight, the blood volume, and the hæmoglobin and number of erythrocytes. Then its cadaver was kept for a certain time at a temperature varying from 5° to 25° C in different cases. At first the animals were killed with chloroform. It was possible however that the amount of chloroform in the blood might influence the results, so we decided to kill the animal by strangling it with the noose of a rope, death taking place almost instantly. After a period of 3–11 hours the body was taken into the operating room, and under aseptic conditions paraffined glass cannulæ were introduced into the central parts of the carotid and the internal jugular. By rubber tubes connected with the cannulæ it was possible either to draw blood from the vessels of the cadaver or to inject solutions into them. The blood when collected was mixed with a solution of sodium citrate to avoid coagulation.

In the first experiments, when the animal was killed by chloroform and the cadaver was kept in a warm place (22° C), it was only during the first 4 hours after death that it was possible to get enough blood. After this there was so much clotting that liquid blood could only be obtained with great difficulty after squeezing out each clot. Five hours after death it was impossible to collect blood from the vessels at all. When later we proceeded to killing the animals by strangling, the blood was the typical dark fluid of asphyxia, and thrombosis did not take place in it for over 10 hours, especially when the cadaver was kept in a cool place.

When the blood had been thus obtained a live dog was brought into the operating room whose blood volume hæmoglobin content and red cell count had been determined After exposing the deep vessels in the neck paraffined cannulæ were introduced into its carotid and the internal jugular Through the first blood was drained from the animal and collected in a graduated cylinder through the second as soon as necessary there was injected a salt solution or blood taken from the dead body

In our first experiments we made very careful and comparatively small transfusions (200–300 c.cm) from the cadaver into the live dog, which had already been subjected to a moderate bleeding not exceeding 25 per cent of its total quantity of blood. The animals seemed so well after transfusion however and there was such an entire absence of toxic symptoms that we soon proceeded to more copious bleedings and to increasing the dose of the transfusion

Thus we convinced ourselves that even when we substituted blood from the cadavers for as much as 60 per cent of the total blood volume the animals stood the operation well without showing any sign of poisoning It must first be mentioned that in these experiments we did not keep the cadaver in a cool place deliberately but left it at a temperature of 17 5 C, and even 22 5 C and secondly the blood was removed after the maximum time possible for such temperatures—i.e after 4–5 hours when clotting had already begun—so that before the transfusion we had to filter off a large number of clots

From these experiments therefore we could conclude that even when keeping the cadaver at the most unfavourable temperatures and for the longest possible time the blood possesses no great toxicity and may be transfused with impunity even in large quantities into living animals.

VITALITY OF CADAVER BLOOD

It was now possible to attempt to answer the next question whether the erythrocytes could live and function after their transplantation into a living animal The observations in the preceding experiments already seem to give an affirmative answer to this question since in these animals there was neither the jaundice nor the hæmaturia that usually accompanies blood destruction and their general condition was not that to be expected after the extensive bleeding that had been performed It might be objected however that the blood from a dead body was simply a liquid of complex composition which after transfusion acted purely mechanically by restoring the volume

It might also be objected that the erythrocytes of the cadaver blood were already degenerating and were thus unable to perform their functions To settle the question and to remove all these objections we arranged a third series of experiments, involving a much greater loss of blood. There were 20 experiments on 35 dogs using the same technique as that in the second series We knew already that dogs usually die when 60–70 per cent. of the total blood volume is withdrawn An injection of salt solution may temporarily restore the activity of the heart or of respiration but it cannot ultimately save the animal Our own experiments confirmed this After removing 70 per cent of the animal's blood and after the immediate injection of a corresponding quantity of warmed saline not one survived.

Starting from these control figures we tried in our experiments to get the greatest possible exhaustion of blood Since it usually ceases to flow from the carotid after 70 per cent has been withdrawn we had to have recourse to repeated washing out of the animal's blood vessels with warmed saline temporarily reviving the animal. By this means we succeeded in raising the degree of blood exhaustion to 90 per cent This is normally absolutely incompatible with life and no injections of saline or colloidal solutions can avail only the transfusion of living functioning blood can keep the animal alive And yet we also succeeded in maintaining life by transfusing blood from a dead animal. The following is an example :

The dog had a total blood volume of 539 c cm with hæmoglobin 95 per cent and red cells 6,000 000 The first bleeding removed 70 per cent of the blood which then ceased to flow from the carotid the heart and respiration ceased It was revived by injecting 160 c cm of saline A second bleeding from the carotid produced diluted blood containing only 29 per cent hæmoglobin Again 200 c cm of saline were injected and after bleeding the fluid contained only 7 per cent of hæmoglobin The total quantity of the blood withdrawn reached 90 per cent This was again followed by stopping the heart and respiration. After transfusion of 450 c cm of blood from a dead body taken 8 hours after death the animal revived On the next day the condition of the dog was good the hæmoglobin being 75 per cent the red cells 5 700 000 The dog lived in healthy condition for several weeks and then was used for another experiment

In other experiments a similar effect was obtained by us from the transfusion of cadaver blood taken 10 and even 11 hours after the death of the animal.

These experiments leave no doubt about the fact that the erythrocytes of a dead body 10 and even 11 hours after death still retain their full vitality and are able to function physiologically quite as well as the erythrocytes of normal blood.

These facts were afterwards fully confirmed by the experiments of Barenboim and Skundina in 1931–32 They repeated our experiments with various modifications and then studied the vitality of transfused blood in dogs using as a criterion the capability of the blood for gas exchange which they established by Barcroft's method. Summing up the results of their experiments upon 47 dogs, they arrive at the conclusion that for 6 and even 10 hours after death blood fully preserves its ability to fix oxygen and retains the properties of blood from the living

To complete the picture one of my collaborators Dr G C Karavanov in 1935 studied another of the elements of blood—the leucocytes—using their power of phagocytosis as a criterion of their vitality Studying this systematically during the life of the animal and at different times after its death he established that phagocytosis is pretty well preserved for the first 11 hours after death after which it disappears rapidly These data therefore are also in accordance with the facts mentioned before and confirm our fundamental thesis that the blood in a dead body preserves its vitality for about 10 hours after death and within this period may be used for transfusion into a live organism The experimental part of the problem of transfusing cadaver blood may therefore be regarded as decided in principle.

CLINICAL TRIAL

The question now arises about the transference of this data to the transfusion of blood in man Unfortunately a series of circumstances to do with organisation prevented me from working out this part of the problem myself and I am indebted to Prof S S Yudin who has continued the work that I began and has introduced into clinical practice the transfusion of blood from cadavers The abundant material collected by him and his colleagues in the years 1932–35 already includes statistical data for about 1000 cases, and fully confirms all the fundamental principles that I have established

It was only last year that it became possible for me to use cadaver blood in my own clinical practice, and our experience in 42 cases allows me to subscribe fully to the enthusiastic support given to this method by Prof Yudin.[1] I must own that at first I was inclined to ascribe their enthusiasm to the zeal common to all authors of a new method. After my experimental experience I never doubted that transfusion of cadaver blood may give clinical results in no respect worse than those from using the blood of live donors The assertion, however, that transfusions of cadaver blood sometimes give even better results than those of blood from live donors seemed to me to be wholly improbable

Nevertheless, my own clinical experience has convinced me that this fact is really true It was shown by the quantity and quality of the reactions after transfusion I realise that our series of 42 cases is still too small for making final conclusions, but the general impression is decidedly in favour of the fact that reactions after transfusing cadaver blood are much rarer and are much less conspicuous For instance, in all our 42 cases a reaction was seen only 6 times in very seriously ill patients, principally with diseases of the hæmopoietic system In no preceding series in our large experience—over 1000 transfusions using citrated blood as well as the direct method—have we observed so few reactions, in fact, they used to amount to 60 and even 70 per cent The following case illustrates the contrast between the two methods

The patient was suffering from carcinoma in the cæcum, with severe anæmia, in consequence of which he received four transfusions At the first two he had fresh citrated blood from 2 donors of a corresponding group, and in both instances the transfusion was accompanied by an extremely strong reaction, with a severe rigor, headache, collapse, and an eruption on the face At the third transfusion he had 500 c cm of blood from a corpse, also of a corresponding group This was accompanied only by a rise of temperature up to 101° F There were no symptoms and his general condition was good Once again he received fresh citrated blood from a new donor of a corresponding group and this transfusion was again accompanied by a precisely similar reaction—rigor, rash, and collapse

We used an absolutely identical method of preparing the apparatus, the salt and citrate solutions in all cases of transfusion, so as to exclude the possibility of any difference in the reactions being due to these How can this be explained?

In 6 cases the transfusing of cadaver blood was performed without our adding any anticoagulant The fact, discovered by Skundina, that in some cases there is no coagulation, or rather on the contrary a "disagulation" of cadaver blood, is in itself of great theoretical and practical interest, and will doubtless be a great advantage for the method. Of the 6 cases 5 had no reactions

The second great advantage of transfused cadaver blood that we have observed is that the increase of hæmoglobin and red cells in the patient is higher than that usually observed after transfusions of an identical quantity of blood from live donors The following figures show the amount of improvement in a patient with chloranæmia She had a transfusion of 400 c cm of cadaver blood of the corresponding group, which had been preserved for 11 days

	Before transfusion (May 28th)	After transfusion (May 20th)	(June 10th)
Hæmoglobin	33 per cent	40 per cent	53 per cent
Red cells	2,300,000	3 000 000	4 250 000
White cells	5200	5800	6200

These increases after transfusion of cadaver blood can only be explained by its sharp stimulation of the hæmopoietic system The action seems to be very variable, and in a number of cases we noted a much milder reaction in the blood count, as shown by a very slight leucocytosis, and by the absence of any great deviation in the Arneth count These differences of reaction probably depend upon differences in the biochemical composition, which in its turn may be dependent upon the cause of death of the cadaver from which the blood was taken These questions still need further investigation.

It is extremely interesting to learn that Prof V P Filatov, who is working on transplantation of the cornea, has arrived at a similar conclusion—that the transplanted cornea from the cadaver eye generally "takes" better than that from a live donor (see *Lancet*, 1937, 1, 1395)

ECONOMIC ADVANTAGES

Besides the general value of the method of transfusing cadaver blood has also some advantages from the point of view of organisation In the first place, the dead body can be exonerated from the suspicion of disease with much greater certainty, since the most elaborate examination of a living donor is limited to clinical, serological, and radiological methods, while the post mortem examination may include an exhaustive pathological investigation of all the organs The other advantage is on the grounds of economy The supply is cheap, and with an efficient organisation it is possible to have always a stock of this blood in any quantity necessary for clinical needs As an illustration the following instance will suffice

The cadaver was that of a man of athletic constitution, a wrestler, who had died suddenly of cerebral hæmorrhage Five hours after his death 2800 c cm of blood was taken from him and received into citrate solution Examination of the blood for syphilis and malaria gave negative results and bacteriologically it proved sterile The medico legal autopsy did not reveal any signs of infectious disease This blood, after different periods of storing, was transfused into 5 patients—500 c cm on the 8th day of preservation to a woman with secondary anæmia, 500 c cm on the 8th day to a patient with pulmonary empyema, 450 c cm on the 9th day to a patient with a carcinoma of the stomach 400 c cm on the 11th day to another patient with empyema and 400 c cm on the 11th day to a woman with pernicious anæmia In all these cases the transfusion had the usual favourable effect

Thus the analysis of my own material leads me to the conclusion that the method of transfusing cadaver blood has a number of very definite advantages

It is true, however, that these advantages can be made use of in practice only with widespread and efficient organisation for procuring the cadaver blood, and this is only possible in large centres In practice the normal organisation of transfusing such blood is still meeting a great many difficulties, chiefly from medico judicial institutions In spite of the fact that there is a large body of supporting evidence for its value and that full sanction has been obtained for taking blood from cases of sudden death with the observance of certain formalities, the medical men at the courts of justice were unwilling to allow the blood of bodies that are at their disposal to be drawn for clinical needs. Yet here by an active coöperation with those in charge of local mortuaries there is opportunity for a further practical development of the method of obtaining cadaver blood.

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[1] A detailed analysis of this work has been published by Prof Shamov's collaborators, G G Karavanov A G Karavanov and A E Perelshtein (*Eksper med* 1936 p 56) Next week Prof Yudin will describe the experience gained from his first 1000 cases

PREJUDICES

There is a strong prejudice in the majority of people at the bare thought of transfusing into a live person the blood from a corpse One need not however go very deeply into these subconscious prejudices to understand that they are of the same order as the primitive instincts that had to be overcome in the early days of ordinary blood transfusion Thus when I began to introduce the method of blood transfusion into the Soviet Union in 1919 I often met refusal, even from near relations to give their blood to save the life of a person dear to them The wife refused to give blood for her husband the father for his son and even a mother would not sacrifice a few cupfuls of her blood to save her child It was due to a natural fear inherited from primeval ages of giving away so valuable a part of their organism as the blood. It needed much work, persuasion and time to overcome these prejudices yet they have now been done away with for ever and there is no longer any serious difficulty in finding donors Another prejudice often met with during the early stages was the unaccountable animal fear excited in the patients and their relatives by the thought of receiving the blood of another into their own veins Many only allowed blood from near relatives women objected to the transfusion of masculine blood, men refused to have feminine blood and many patients took exception to donors of another race

Such an attitude towards the transfusion of another's blood is a survival of primitive views about blood as the bearer of particular mystic properties and therefore a certain period of time elapsed before we could put an end to these prejudices. It is now well known that at present patients fully appreciate the value of a transfusion, often asking for it themselves, generally without taking any interest in identifying the donor

So also in the transfusion of cadaver blood there are at present prejudices that are essentially analogous. They come first from the friends and relations who feel a holy awe at the thought of disturbing the repose of the dead. If however post mortem examinations are widely used for scientific research if parts of the human body serve for making up skeletons and different preparations without offending anyone s imagination then surely the taking of blood from a small incision in a vein is a very trifling measure—the more so if it is accompanied by the injection of antiseptic solutions and the embalmment of the corpse. If it is true the blood of the dead person drawn into a glass vessel retains its full vitality would this not produce a desire not to destroy it but to give it the chance—by transfusing it into the living body—of continuing useful life even while the body to which it formerly belonged is decomposing? The understanding of these facts ought to afford to the relations of the dead person a sense of deep satisfaction rather than calling forth expressions of horror and protest. There is yet another objection put forth by the patient and his relatives. Cadaver blood in the imagination of a simple and narrow minded person is involuntarily connected with "ptomaines corruption a multitude of microbes and with the idea that the one to whom this blood has belonged has ceased to exist and is now exposed to the horrible process of putrefaction. It will be seen therefore that all these notions are thoroughly unscientific and are associated with the tendency to impart to the blood a whole series of mystic properties connected with the personality of its former host This conception is also illogical since in medicine there is now a wide use for blood taken from slaughter houses as well as for different organs prepared in different ways and injected into the veins of a patient. Everyone has become accustomed to this and nobody protests against it. How much more simple and natural then it is to use instead of the blood of a dead animal the blood of a dead human being?

Surely after a certain period man will overcome these prejudices as easily as the numerous others that have arisen during the history of the development of blood transfusion

CONCLUSIONS

The transfusion of cadaver blood seems to be fundamentally established experimentally as well as clinically The method is not only equal to other methods of transfusion applied in clinics but may even have some advantages over them.

Further advances may be made along the following lines: first by a more detailed study of the biochemical changes in the blood after its death secondly by accumulating further clinical observations; and thirdly by an efficient organisation that will make use of the many opportunities to collect blood from all suitable cadavers.

PROLONGATION OF ACTION OF THE PITUITARY ANTIDIURETIC SUBSTANCE AND OF HISTAMINE, BY METALLIC SALTS

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During an investigation of factors influencing gastric secretion extracts of the posterior lobe of the pituitary gland have been found to have an inhibiting effect on glandular secretion (Dodds and Noble 1937, Cutting Dodds Noble and Williams 1937) As this action is transitory experiments have been conducted in an attempt to prolong the inhibition. The antidiuretic principle of the posterior lobe present in the extracts is readily assayed by the method of Burn (1931) and is thus suited for preliminary tests. Batches of four 200 g. male rats, fasted for 12 hours, were given 5 c cm. water per 100 g body weight and simultaneously injected with the substance on trial The urine excreted was collected and measured at regular *intervals*

Since the action of insulin on the blood sugar is prolonged by combining it with zinc salts or

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* Working with a grant from the Medical Research Council.

Nichols's case occurred in a healthy girl, aged 11 years, three days after the onset of the eruption. A purple mottled area 6 in. by 2 in. extended laterally on either side of an infected pock. Incision showed the subcutaneous tissues to be dull grey in colour, there was little bleeding and no pus, death occurred within 36 hours, staphylococcus was found in smears from the lesion.

In Watson's case an indurated and tender area surrounding a small lesion occurred on the fourth day of the eruption. This area became discoloured within four hours, gangrenous in twelve hours, in twenty-four hours extended from axilla to iliac crest, was accompanied by profound toxæmia, and later by broncho-pneumonia and meningism. The bacteriology of the lesion was not worked out. Prompt treatment by blood transfusions (500 c.cm. on each of three occasions) led to slow recovery, a point of great practical importance in view of the desperate nature of the illness.

The case described below is of the same clinical type as Storrie's, Nichols's, and Watson's cases—that is, massive skin gangrene in a single lesion, accompanied by a few smaller lesions, occurring *early* in the eruptive stage of chicken-pox, spreading with great rapidity and with little or no development of pus, accompanied by profound toxæmia, and (in this case) fatal within 48 hours. The special interest of the case is that, although swabs from the lesion showed staphylococcus, the causal organism was proved to be a hæmolytic streptococcus of Griffith Type 23, and that a heavily infected tonsillitis present at the same time was most probably the source of infection.

CLINICAL RECORD

A healthy boy, aged 4½ years, was admitted to the L.C.C. Park Hospital, London, on Sept. 30th, 1936, on the fourth day of the eruptive stage of chicken-pox.

In addition to the typical pocks in all stages of development, there was a large gangrenous area 5 in. by 3 in. surrounded by an indurated livid zone on the right side of the upper trunk, and also several smaller gangrenous spots on the trunk and limbs (Fig. 1). The fauces were injected, the tonsils swollen, the tongue red, stripped, and papillated, clinically suggesting a streptococcal infection, the nostrils were slightly crusted, no membrane was seen in throat or nose. There was also a small area of cellulitis of the skin under the chin. The temperature was 100.6° F., with pulse-rate 154 and respirations 48. The child was in a highly toxic condition, restless, drowsy, and frequently vomiting. The small swelling under the chin was said to have appeared some 24 hours before admission, and the gangrenous areas on the morning of admission.

In view of the possibility of both diphtheritic and streptococcal infection 16 000 units diphtheria antitoxin was given intramuscularly and also 20 000 units diphtheria antitoxin and 10 c.cm. streptococcal antitoxin intraperitoneally. Within 24 hours the large gangrenous lesion spread several inches in all directions and along with its surrounding livid indurated zone occupied the greater part of the skin of the right side of chest and abdomen. The smaller scattered gangrenous areas, seven in number, varied in diameter from ½ to 1½ in. and changed little throughout the course of the illness. The area of cellulitis under the chin increased slightly. The child was in extremis, all feeds were vomited, salines were not retained. He was given 400 c.cm. Ringer's solution with 5 per cent. glucose intraperitoneally. He gradually sank and died on the evening of Oct. 1st—that is, within 48 hours of the appearance of gangrene.

During life, swabs taken from the nose and throat showed streptococci, staphylococci, diphtheroid bacilli, pneumococci, and Pfeiffer's bacillus in films, and staphylococci and hæmolytic streptococci on culture. No diphtheria bacilli were found, Hofmann's bacillus was present. Swabs from the large gangrenous area showed staphylococci in films and *Staphylococcus aureus* on culture, no diphtheria bacilli were found, Hofmann's bacillus was present, no streptococci were grown from swabs of the gangrenous area.

REPORT OF NECROPSY

MACROSCOPIC

The skin showed several dark necrotic lesions of the skin (Figs. 2 and 3). Two of these lesions were on the anterior aspect of the abdomen, two on the left side of the chest, one over the left great trochanter, one over the anterior aspect of the upper third of the right thigh, one on the left upper arm in the region of the insertion of the deltoid, one on the left side of the chin, 1 in. below the angle of the mouth. There was a large area underneath the right axilla in which the skin had desquamated, but there was no definite central eschar to be seen.

The above lesions consisted of a central black dry eschar surrounded by some degree of congestion. The surrounding and underlying tissues were deeply infiltrated, and were hard to the touch. There was no gas formation, neither was there any offensive smell as would occur with anaerobic organisms. In addition to these lesions there were a few typical varicella pock-like lesions to be seen. On excising through the skin of one of these necrotic areas the whole underlying tissue was found to be thickened, hard, and definitely necrotic. The wound filled with clear exudation immediately. In some instances the lesions only went through the depth of skin and subcutaneous fat. In the lesion under the right axilla the intercostal muscles were also affected. The characteristic feature was necrosis. There was no pus and surprisingly little congestion—this would be accounted for by the intense œdema and tension under which the tissues were placed.

The peritoneal cavity contained about one pint of clear yellow fluid. There was clear fluid in each pleural cavity.

The *tongue* was furred and congested in the posterior half. The *tonsils* were congested. There was no evidence of membrane over them. The peritonsillar area was very congested. The *trachea* was congested, and the *bronchi* more so, particularly in the lower portion. The *lungs* were voluminous, dark in colour, and were not adherent to the chest wall. There was no consolidation to be felt. On section there was slight œdema and much congestion. There were no hæmorrhages underneath the pleura.

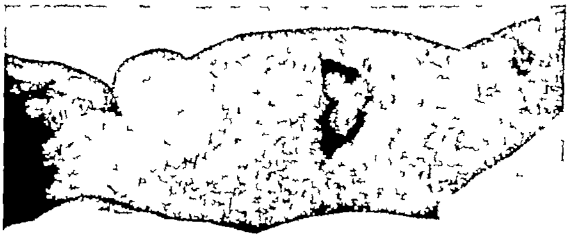

FIG. 1.—Varicella gangrenosa. Large and small necrotic lesions during life.

Heart.—The pericardial sac contained ¼ oz. of clear fluid. The heart showed marked dilatation of the right side. There were no subpericardial hæmorrhages. On opening the heart there was found to be clot in the right auricle and ventricles, probably of antemortem origin. The left side was in systole. The valves were normal. The heart muscle was pale and flabby.

The *stomach* and *intestines* appeared normal. The *liver* was slightly enlarged and was light in colour. On section there was marked cloudy swelling and commencing fatty change. Here and there a few small areas of localised congestion were found. The *gall-bladder* was distended and contained a clear mucous fluid. The *spleen* was somewhat enlarged but quite firm. On the outer aspect there was an area of perisplenitis, and a small area about the size of a sixpence covered with fibrin. Underneath this area was some congestion and hæmorrhage. On section the spleen was firm and dark in colour. The Malpighian bodies could be distinguished. There was no infarct Both *kidneys* showed some congestion. The cortex was pale and showed some cloudy swelling A few small areas of local congestion were observed The capsule stripped easily The *suprarenals* appeared normal and were not congested.

Underneath the *lesion of the chin* there was a firm brawny swelling which on excising consisted of œdematous necrotic tissue but no pus was seen.

The central nervous system was not examined

MICROSCOPIC

Skin lesion.—Sections were made from three sites all of which show the same general features—disappearance of epithelium necrosis of the surface layers congestion hæmorrhage, and œdema of the deeper tissues extending into the muscular layers There is very little cellular reaction At the edge of the surface lesion the necrotic process can be seen below the intact epithelium penetrating the deeper tissues to a considerable distance beyond the site of the clinical condition. There is no suggestion of pus formation or marked infiltration with leucocytes By Gram's method large numbers of streptococci can be seen in the superficial necrotic layer and in the deeper tissues and extending outwards in the fatty areolar tissue in lines parallel with the surface

Tonsil —Section shows very marked congestion. There is some desquamation of the epithelium and in the crypts there is necrotic material which contains large numbers of streptococci. The surrounding tissue is also markedly congested

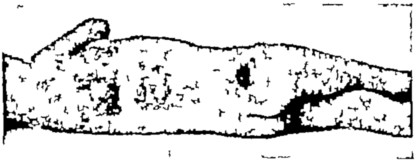

FIG 2 —Large lesion post mortem.

The *lung* shows no consolidation but much congestion and some areas of œdema. The bronchial epithelium is disorganised. Some masses of streptococci—probably post mortem in origin—are to be seen. The *heart* also shows congestion and acute toxic myocarditis In the *liver* there is congestion marked cloudy swelling and fatty change; the fibrous tissue of Glisson's capsule shows infiltration with mononuclear cells Section of the *spleen* shows some congestion, and in parts small hæmorrhages There is a reduction in the lymphatic tissue of the Malpighian corpuscles The cells of the pulp show proliferation and degenerative changes By Gram's method a few streptococci were seen in the pulp In the *kidneys* also there is congestion particularly under the capsule and a few small hæmorrhages The glomeruli are congested while the secreting tubules show marked toxic changes with loss of nuclei and cellular degeneration The *suprarenals* show much congestion, both of the cortex and the medulla. In the latter hæmorrhages are to be seen The cells of the cortex show degenerative changes, loss of nuclei disappearance of the cells &c.

The main feature of this case is the extensive streptococcal necrosis of the skin with extension beneath the epithelium The main characteristics of the lesions are necrosis hæmorrhage and œdema. The streptococci are present in large numbers There is practically no cellular reaction on the part of the body Other organs show marked toxic changes and several show small masses of streptococci which formed post mortem. In view of the large numbers of streptococci in the crypts of the tonsils it is to be presumed that this was the source of the streptococcal infection

BACTERIOLOGICAL FINDINGS

The following specimens were taken for bacteriological investigation heart blood excised pieces from various lesions and fluid from the incised areas. Films from these materials showed the presence of Gram positive cocci. On culture hæmolytic streptococci were found in almost pure culture A single drop of the heart blood plated out contained many thousands of viable streptococci in pure culture.

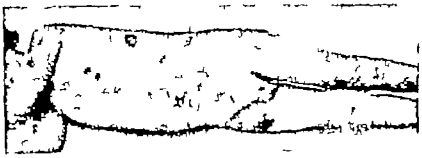

FIG 3 —Small lesions and ordinary chicken pox crusts post mortem

Cultures were specially taken from the tonsils and the necrotic lesions and cultured for diphtheria bacilli. No diphtheria bacilli were found, not even in the throat and this organism can be definitely excluded. No anaerobes of the gas-gangrene group were found in anaerobic cultures from the various specimens.

The streptococcus was extremely hæmolytic, both in cultures and when serum broth cultures were added to a suspension of horse red blood corpuscles showing the formation of a powerful soluble hæmolysin. It belongs to Lancefield Group A a group associated with severe human infections The organism grew very rough and it was difficult to type by the Griffith method, and only after numerous subcultures was it possible to obtain specific agglutination with pooled sera of types in our possession As individual type sera were not available Dr V D Allison of the Ministry of Health Laboratory kindly determined that the streptococcus belonged to Type 23 This strain is not an uncommon type and has been found in scarlet fever tonsillitis in a girls school, &c. It occurs sporadically giving rise to localised outbreaks The strain is very rough and difficult to type

DISCUSSION

In what has previously been written about varicella gangrenosa little information about the bacteriological cause has been forthcoming We believe that the condition is due to the infection of the varicella lesion with a virulent micro-organism such as the streptococcus or diphtheria bacillus

Two distinct types may be noted—one characterised by rapid onset extensive necrosis and intense toxæmia, the condition being rapidly fatal within a short time. The present case due to a hæmolytic streptococcus belongs to this type and from its clinical similarity to the cases described respectively by Storrie, Nichols and Watson, it appears probable that these were also streptococcal in origin.

The second type of case is characterised by a much slower course with the formation of painless punched out ulcers Such cases have been described by Krjukoff and Joe in which the infecting organism is the diphtheria bacillus The clinical appearances differ inasmuch as toxic symptoms appear late disease and death is due to diphtheritic my

It is possible that other organisms may infect secondarily the varicella lesions, and in all cases of varicella gangrenosa efforts should be made to identify completely the micro organism concerned.

SUMMARY

(1) A case of massive skin gangrene complicating the early eruptive stage of chicken pox and rapidly fatal is described (2) The causal organism was streptococcus pyogenes (Type 23), and the patient had a concurrent and heavily infected streptococcal tonsillitis (3) This fulminating type of varicella gangrenosa has previously been described, but its ætiology has hitherto been obscure (4) Less acute types of varicella gangrenosa occur, arising usually in the later stages of the eruption, some of them being associated with a virulent strain of *Corynebacterium diphtheriæ*

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FATAL PNEUMOTHORAX DUE TO RUPTURE OF A SOLITARY BULLA OF THE LUNG

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Spontaneous pneumothorax occurring suddenly in apparently healthy persons is reported from time to time, but it is rarely fatal and opportunities of determining the nature of the underlying lesions are few In cases that have been examined post mortem the condition has sometimes been traced to rupture of a subpleural bulla, and the case now reported was of that type The clinical symptoms were unusual in that they were referred to the abdomen and led to a diagnosis of perforated peptic ulcer

The patient was a coal miner aged 29 He was underground shovelling coal when he was suddenly seized with pain in the upper part of the abdomen He was unable to continue work on account of the persistence of the pain, and five hours later he was admitted to hospital There was pallor The respirations were shallow and at the rate of 26 per minute The pulse rate was 76 His abdomen was rigid, especially in the right upper quadrant where there was also tenderness A perforated peptic ulcer was suspected and a laparotomy performed, but apart from some congestion of the appendix no abnormality was found in the abdomen On the following day respiration became shallower and more rapid, and there was pain in the right side of the chest The physical signs indicated pneumothorax, and aspiration withdrew 7 litres of air in an hour The patient's condition improved for a time after the aspiration but subsequently deteriorated, and he died on the second day

At autopsy there was subcutaneous emphysema over the right side of the chest The right lung was completely collapsed At its apex was the familiar appearance of a healed tuberculous lesion, consisting of a fibrous scar in the pleura with puckering of the surrounding lung tissue From this scar a cord like adhesion, 1 in long, extended to the dome of the parietal pleura Arising from the lung near the point of attachment of this adhesion was a collapsed bulla ¾ in in diameter A cannula was placed in the bronchus, and the lung was perfused with water The bulla became distended and water escaped through a tear ⅛ in long on its summit The other lung was very œdematous Microscopic examination showed collapse and commencing broncho pneumonia in the right lung All the other organs were normal except the liver in which there were bubbles of air beneath the capsule, the air having apparently reached the liver from the chest wall by way of the falciform ligament

DISCUSSION

Young (1936) states that "little is known of the pathology of benign or simple pneumothorax Many writers, chiefly on theoretical grounds, have regarded it as due to rupture of an emphysema bulla near a small area of healed subpleural tuberculosis" The case which has just been described provides substantive evidence in this direction, and a number of other reported cases show clearly that the bulla conclusion is well founded. Thus Weber (1921), who found that pneumothorax in otherwise apparently healthy persons was not rare, regarded it as due to rupture of a minute superficial emphysema bulla resulting from a healed miliary tubercle He quoted the fatal cases of Dittrich, Pitt, and Zahn in which ruptured bullæ were found post mortem Fischer Wasels (1922, 1927), basing his views on post-mortem findings, stated that near a scar at the lung apex there may occur, singly or in greater number, air containing bullæ up to the size of a cherry In order that the condition should not be confused with the bullæ of ordinary emphysema he suggested the term *Spitzennarbenblasen* Among recent fatal cases of ruptured bullæ may be mentioned those of Tait and Wakely (1935) and Settle (1936)

In addition to the bullæ associated with scarring of the lung there is another type due to congenital malformation Rupture of these may also give rise to pneumothorax Fatal cases have been described by Schmincke (1928) and Oechsli and Miles (1934), and others Thus there is definite evidence that rupture of a bulla, whether due to scarring or congenital malformation, may be responsible for pneumothorax Radiological investigation also lends support to this view Gordon (1936) was able to demonstrate bulla formation in 5 cases of spontaneous pneumothorax It was not possible to say whether these were the result of scar formation or of the nature of congenital cysts He concludes that all the recorded evidence supports the conception that benign spontaneous pneumothorax is due to rupture of a bleb, bulla, or cyst which in the majority of cases cannot be detected during life Cases in which they could be demonstrated radiologically have been reported by several writers including Bernou and Neumann (1935), Walinder (1936), and Castex and Mazzei (1935) The latter examined 12 cases in all of which recovery took place They found bullæ by radiography in three of them, and they conclude that benign pneumothorax affects chiefly males of 20–30 years who are apparently in perfect health The disease is afebrile and is not associated with any manifestation of tuberculosis

Bullæ are however not present in all cases In Wood's (1930) fatal cases only adhesions between the collapsed lung and the summit of the pleura were found. Sergent and Pignot (1930), as a result of clinical and radiological examination in 6 cases, emphasise the importance of the tearing of adhesions caused by latent or healed tuberculosis, and they minimise the importance of ruptured bullæ Rupture of a bulla they consider must be rare, for the condition is usually seen in young subjects, below the age when general emphysema is met, and this argument has been used by several writers A point which may have been overlooked however is that the fatal cases are not necessarily associated with general emphysema of the usual type They are in fact most often due to localised bulla formation on the surface of the lung Ramsbottom (1920) thinks that a bulla such as is seen on the margin of the lung in emphysema would on rupturing collapse and not produce an appreciable pneumothorax and he believes that pneumothorax arises only in cases in which the ruptured bulla is in free communication with a bronchus large enough and in consequence rigid enough to resist collapse

An important feature of the present case was the reference of pain to the abdomen and the simulation of the clinical picture of perforated peptic ulcer Abdominal symptoms are apparently rare in pneumothorax but they have been noted in a few instances where the cause was pulmonary tuberculosis. Burrell (1931) reports one case which was at first mistaken for a perforated gastric ulcer and in Shrikhande s (1935) patient there were nausea and vomiting and pain in the right side of the abdomen. Oechsli and Skillen (1933) have also recorded abdominal symptoms

The part played by exertion in the causation of pneumothorax is difficult to assess Friesdorf (1927) analysed 177 cases of non tubercular pneumothorax which had been published up to 1927 In 67 of these the pneumothorax occurred without apparent cause and in 60 the onset was associated with bodily exertion Coughing crying sneezing and laughing were mentioned in another 20 while in 9 the condition developed during walking. In Friesdorf's own patient the pneumothorax came on during the lifting of heavy stones while in that of Tait and Wakely pain in the chest developed a quarter of an hour after the lifting of the end of a bed. On the other hand instances are recorded of the condition developing in an individual at complete rest Galliard (see Sergent and Pignot) recorded that a young man while at a religious service and in a state of absolute calm was seized with a violent pain in the chest due to the onset of pneumothorax In the case described in the present paper the question of exertion contributing to the onset was of medico-legal importance since the illness began while the man was at work shovelling coal. At the coroner s inquest the jury returned a verdict of death from natural causes The coroner in accepting this verdict said he disagreed with it, inasmuch as the medical evidence indicated that the exertion of the man s work may have been a contributory cause to his death. A somewhat similar but non fatal case came before a German court to determine whether an individual was entitled to compensation and a report of the action is given by Staby (1935)

The claimant was a man of 35 who was sawing poles dragging them away and piling them up when he developed dyspnœa It was subsequently found that he had developed a pneumothorax and a perforation due to rupture of a bulla was diagnosed by endoscopy The case was complicated in that two years previously the man had received an injury to his chest due to a motor-cycle falling on him It was decided on experts reports that the man was not entitled to compensation Among the reports was that of Prof Morawitz, who stated that spontaneous pneumothorax is due to inborn changes in the lung especially cystic enlargement of the alveoli and bulla formation, and that external contribution may be very slight

SUMMARY

A man aged 29 was suddenly seized with pain in the upper part of the abdomen He showed the clinical symptoms of a perforated peptic ulcer but post mortem it was found that he had a pneumothorax due to the rupture of a solitary bulla of the lung The lesion was associated with a scar due to healed tuberculosis.

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SPONTANEOUS PNEUMOTHORAX ASSOCIATED WITH BULLOUS EMPHYSEMA

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Opportunities of studying spontaneous pneumothorax in the post-mortem room are relatively rare and as in this instance the condition was associated with bullous emphysema, diagnosed radiologically in life an account of the case may be of interest

The patient a man aged 35 an air-pilot was admitted to the Middlesex Hospital under the care of Dr G E S Ward on Sept 16th, 1936 (No 97842) Since 1926 he had suffered from attacks of dyspnœa and abdominal discomfort which he had attributed to dyspepsia, and for which he had never consulted a doctor During the past month he had noticed increasing dyspnœa with abdominal pain and loss of weight but he had been able to continue flying until two days before admission There had been no cough or pain in the chest On Sept 14th he consulted Dr T R E Hillier who found severe dyspnœa and displacement of the heart to the right On the next day he saw Dr Evan Bedford and was admitted to hospital as a case of spontaneous pneumothorax

He had had an injury to the right eye 25 years ago double pneumonia seventeen years ago and an hæmoptysis six years ago There was nothing of note in his family history

He was a thin man with cyanosis of the lips and some dyspnœa at rest respirations 24 per minute There was no fever and the pulse-rate was 80 The chest was rather rigid with bulging of the intercostal spaces on the left side The respiratory movements and the tactile fremitus were diminished particularly on the left The trachea was displaced to the right the apex beat could not be localised on the left but cardiac pulsation was palpable one inch to the right of the sternum On percussion the note was resonant on the right and hyperresonant on the left side of the chest Cardiac dullness could not be defined to the left of the sternum but it was found to extend one inch beyond the right sternal border The breath sounds were harsh and vesicular on the right side with a few basal râles weak at the left upper zone and absent at the left base Vocal resonance was diminished on the left side A coin-sound could not be elicited There were no abnormal findings in the other systems

A *diagnosis* of left-sided spontaneous pneumothorax was made and this was confirmed by inserting a needle into the left pleural cavity when an average pressure of plus 4 cm water was found 400 c cm air were aspirated, which somewhat relieved the patient A radiogram taken on the same day was reported on as follows "Pneumothorax present on the left side, some fluid is also present at the left base The upper lobe is prevented from collapsing by an adhesion at the level of the first rib At the left base there is a large translucent area bounded by lung tissue, which is probably a large emphysematous bulla At the right base the diaphragm is peaked suggesting adhesions" (The film is reproduced in Fig 1) The possibility of the translucent area at the left base being a thoracic stomach was excluded by a barium swallow, which was normal

There were no appreciable changes in the physical signs during the patient's stay in hospital Intrapleural pressures were recorded on Sept 26th and Oct 20th when the average readings were minus 2 and plus 1 cm water respectively 250 c cm air was aspirated on each occasion but there was no clinical or radiological evidence of re expansion of the lung The bulla however, varied considerably in size On Sept 24th and Oct 1st it had expanded, but on Oct 15th it was no longer visible, although a smaller bulla could be seen at a slightly higher level Its disappearance was due to collapse and not to rupture, since it reappeared on Oct 18th and was as large as before *On this date a radiogram was taken with the* patient lying on the left side which showed a fluid level in the bulla The patient left hospital at his own request on Oct 24th

He was readmitted ten days later with a history of increasing breathlessness during the preceding twenty four hours He was intensely cyanosed and dyspnœic, and the left side of the chest was bulging and tympanitic on percussion A second spontaneous pneumothorax on the left side was diagnosed and on inserting a needle into the pleural space, a high intrapleural pressure was found 2000 c cm air was removed and, as the pressure was again positive the next day, a further 800 c cm was aspirated, leaving a negative pressure of 6 cm water His general condition was greatly improved by these measures A *radiogram taken on Nov 4th showed the left lung col* lapsed as before with the bulla still present at the left base During the next three weeks there was again no change in the physical or radiographic findings in the chest On Nov 27th he developed tonsillitis with a pyrexia of 101° F This ran a normal course, and four days later the inflammation and fever were subsiding, but in the early hours of Dec 1st the patient died suddenly in his sleep

POST MORTEM FINDINGS

The following is an abstract of the post mortem report (Bland Sutton Institute P M No 243/36)

General examination showed the body of an adequately nourished man weighing 130 lb When the sternum was removed the unopened pleura on the left side bulged forward and on incision air escaped, showing that air under positive pressure was present in the pleural cavity The heart was displaced to the right The left lung was collapsed except for the apex, which was attached to the parietes by adhesions At the base of the lower lobe of the left lung there was a large emphysematous bulla about 2 in in diameter, which remained inflated and there were two smaller bullæ situated above it (see Fig 2) There were several adhesions *over the pleural surface of* the right lung, which was emphysematous Two small cavities were found in the apex of the right upper lobe Their origin is doubtful since there was no surrounding fibrosis and no evidence of tuberculosis was found on microscopical examination No communication could be demonstrated between the large bulla at the left base and a bronchus, although it would seem probable that such a communication must have existed, since the bulla was seen to vary in size and even to collapse in the serial radiograms taken during life There was also no evidence of a rupture in the pleura, either tuberculous or emphysematous to account for the origin and persistence of the pneumothorax. No other abnormality was found

Death was presumed to be due to a further escape of air into the spontaneous pneumothorax already existing on the left side causing a high positive intrapleural pressure The pneumothorax was considered to be emphysematous in origin in view of the emphysematous bullæ present on the left side and the general emphysema of the right lung There was no evidence of pulmonary tuberculosis The adhesions present were probably due to the double pneumonia recorded in the previous history

Dr R A Young (1936) has recently given a full account of spontaneous pneumothorax in all its aspects Kjaergaard (1932) points out that there are two main types of non tuberculous spontaneous pneumothorax (1) it may be associated with generalised emphysema, which is relatively uncommon, and (2) it may occur in healthy persons in whom no gross abnormality can be found in the lungs The case described belongs to the first type, since there was clinical and pathological evidence of bilateral emphysema with emphysematous bullæ on the left side, and in this type the mortality is higher The association of spontaneous pneumothorax with emphysematous bullæ was recorded by Ranking in 1860 and by Pitt in 1900 The radiological diagnosis of emphysematous bullæ has been discussed by Freedman (1936) Jacobaeus (1935) shows how difficult this may be, especially when the bulla is large In the case he describes the correct diagnosis of severe bullous emphysema was only made after thoracoscopy, the clinical and radiological appearances resembling pneumothorax Abdominal pain as a prominent symptom in spontaneous pneumothorax was recorded by Settle (1936)

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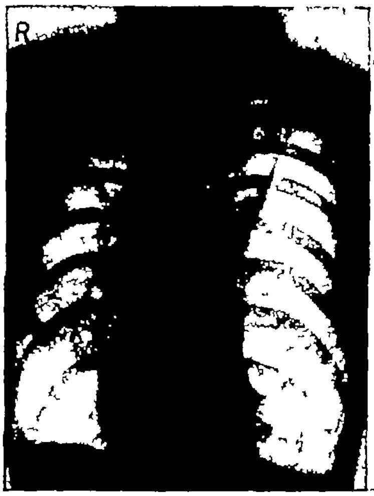

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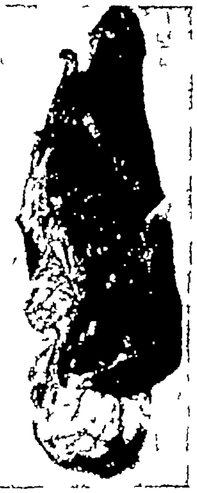

FIG 1 —Radiogram taken on Sept 16th 1936 showing a pneumothorax on the left side The left lung is collapsed except for the upper lobe and there is a small pleural effusion at the left base The emphysematous bulla is *present at the left base*

FIG 2 —Photograph of the left lung posterior aspect, showing the emphysematous bulla at the base of the lower lobe

It is difficult to assess what part, if any, the patient's occupation as air pilot may have played in the development of the emphysema Although, as Beaumont and Dow found in their investigation, subjective improvement usually accompanies compressed air therapy in emphysema, in this case the patient said his breathing was always easier when he was flying This is surprising, considering the degree of emphysema present

SUMMARY

(1) A case of spontaneous pneumothorax, occurring *in an air pilot, is described* (2) Radiography showed a large emphysematous bulla on the affected side This was confirmed by post mortem examination,

which also showed general pulmonary emphysema There was no evidence of pulmonary tuberculosis (3) The spontaneous pneumothorax was considered to be emphysematous in origin

Our thanks are due to Dr G E S Ward and to Dr D Evan Bedford for their permission to record this case We are also indebted to Prof James McIntosh for particulars of the post mortem findings and to Dr H. K Graham Hodgson for permission to reproduce the radiogram

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EXPERIENCES WITH A CONCENTRATED WHOLE LIVER EXTRACT

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The continued efforts of biochemists to obtain a concentrated liver extract of greater purity and higher concentration for parenteral administration leads to the hope that in the near future the pure anti-anæmic principle will be available for clinical use In the meantime the treatment of pernicious anæmia with fractions highly concentrated although still impure is the method of treatment of choice and one which continues to gain in favour among practising clinicians both for treatment of cases in emergency and in relapse as well as for maintenance

There are many points in favour of the parenteral administration of such concentrated liver products providing that a reliable product is used. There is the assurance of an almost certain dosage, which is administered under the absolute control of the physician. The preparations are so potent that for practical purposes they replace the need for transfusion and large doses can be given in the so-called resistant cases Their relative cheapness and the infrequent injections that are necessary suggest that on grounds of economy alone they are to be preferred Their convenience for patients on maintenance treatment who are travelling is another point in their favour (Murphy 1933)

In this paper an attempt has been made to assess from personal experience with one such preparation the value of this form of therapy The actual preparation used in these clinical trials was a concentrated solution of liver extract in which the active principles from a hundred grammes of whole liver are concentrated in 1 c.cm This dose contains from 9 6 to 11 8 per cent total solids, with an average of about 10 5 per cent The total nitrogen content varies from 11 3 mg to 14 7 mg with an average of 12 1 mg per 100 grammes of liver It should be noted that in stating the concentration of this preparation no reference is made to the question of the difference in therapeutic effect achieved by intramuscular injection as opposed to the effect of liver preparations administered by mouth. A well known preparation of German manufacture, extensively used in this country is claimed to contain the anti-anæmic principle from 5 g of fresh liver and to have a potency of 500 This of course is because the therapeutic effect of parenteral administration is contrasted with that of the oral administration of liver for all recent clinical reports confirm that when liver is given intramuscularly it is about a hundred times more potent than when it is given by mouth Upon such a basis of comparison the present product would be equivalent to 10 000 g of liver given by mouth.

In the following report observations have been made upon —

1 Cases of uncomplicated pernicious anæmia in relapse or in the first attack.

2 Cases of pernicious anæmia on maintenance treatment

3 Cases of subacute combined degeneration both with severe and with slight anæmia

4 Cases of chronic hypochromic anæmia: (a) Idiopathic presumably with some degree of aplasia and inability to respond adequately to the usual iron therapy (b) Cases of hypochromic anæmia after gastric operations failing to respond satisfactorily to iron therapy

CASES IN RELAPSE

In most cases a fixed plan of dosage as regards time of administration of the liver product and the intervals between subsequent doses was adhered to

The clinical investigation and blood count having established the diagnosis and the degree of severity of the anæmia, an initial dose of the extract usually 2 c cm was administered intramuscularly A further injection was given after an interval of seven days, or even fourteen days in milder cases, but in cases more severely ill the second dose was sometimes given at an interval of less than seven days Thereafter as far as possible injections were given at weekly intervals or multiples of this During the first 10 days the usual reticulocyte counts were made where possible but in many cases it was not possible for this to be carried out daily In cases where daily reticulocyte estimations could not be made the observations were carried out on the 3rd, 4th and 5th days, when the maximum response was likely to be seen, and if the percentage of reticulocytes present at this stage was such as to indicate approximately maximal response to treatment further reticulocyte counts were not made

In these investigations more attention has been paid to the rate of regeneration of the hæmoglobin and red cells under the influence of the concentrated liver preparation such observations having been made at intervals of 7 or 14 days as far as possible In none of the cases recorded was any other form of liver preparation used nor was the route of administration other than intramuscular The only supplementary treatment was that in a few cases indicated in the tables iron as in a simple form of ammon cit mixture was administered in the later stages of recovery

In the present series of cases in relapse there are in all observations on 16 patients.

Table I gives details of the age and sex the initial red count and the hæmoglobin The next column shows the first dose of liver extract given followed by a figure which represents the number of days before a subsequent dose was given Next follows a column indicating the maximum reticulocyte response actually observed In this connexion it should be stated that this does not necessarily correspond with the calculated reticulocyte response to be expected since in a number of cases only a few daily observations were made at about the time when the maximum response should have occurred In a few cases no reticulocyte observations were made In the next column are the subsequent doses of liver given in each case, followed by a figure representing the number of days before further doses were administered The next column summarises the total amount of liver extract given, and the blood count observed at a definite number of days from the commencement of the injections The actual number of days under observation for each case is shown in the final column

From this Table, therefore, it is possible to see at a glance the initial blood count, the total dose of liver extract used, together with the days over which observations were made, and the final blood count

TABLE I

Effect on Cases in Relapse

Case	Sex and age	R B C mills/c mm	Hb (per cent)	Initial dose (c cm) and interval in days	Maximum Reticulocyte count (per cent)	Subsequent doses (c cm) and intervals in days	Total dose (c cm)	Final blood count		Days under observation
								R B C	Hb (per cent)	
1	F 47	1 04	22	2 (7)	32	1 (5) 1 (6) 1	5	4 8	92	35
2	F 67	1 65	44	2 (3)	18	2 (6) 1	5	4 6	80	28
3	F 46	1 40	24	2 (8)	—	1 (7) 1	4	4 4	80	28
*†4	F 57	1 13	30	2 (7)	31	1 (7) ×3 (Infection) 1 (1) ×7	5 12	2 7 3 7	54 74	28 35
5	M 52	1 8	45	2 (7)	15	2 (7) 2 (14) 1	7	4 7	90	35
6	M 47	1 8	44	3 (7)	13 5	2 (14) 1 (14) 1	7	4 8	94	35
*7	F 43	1 74	42	2 (7)	15	2 (14) 1	5	4,2	78	28
*8	F 47	2 15	46	5 (21)	—	—	5	4 1	72	21
9	F 38	0 98	20	2 (4)	34	2 (4) 1 (7) 1 (7)	7	4 45	84	35
10	M 40	0 90	18	2 (2)	30	2 (7) 2 (7) ×2 1	9	3 9	70	35
*11	F 60	1 70	40	2 (3)	—	2 (4) 2 (4) influenza 1 (7) ×3	6 9	3 1 4 7	60 90	28 42
12	M 63	1 7	42	3 (7)	16	2 (14)	5	4 9	100	28
13	F 36	2 5	56	2 (7)	7	2 (14) 2 (21)	6	4 4	90	49
*14	F 56	2·0	50	2 (7)	—	1 (14) ×2	4	4 0	74	35
15	F 53	1 0	30	2 (4)	28	2 (4) ×3 2 (7)	10	4 6	88	35
†16	M 47	1 9	48	2 (4)	15	2 (7) 1 (7) ×2	6	4 5	92	35

* These cases also received short courses of iron before transfer to the out-patient maintenance clinic

† These cases were not subsequently observed on maintenance treatment.

All the patients treated made a satisfactory recovery, and with the exception of two, all came under subsequent observation in the out patient department for maintenance treatment, and they are included among the cases dealt with in the next section under maintenance treatment

Results —From Table I it will be seen that from 2 to 5 c cm of the concentrated liver preparation given intramuscularly was enough to produce a satisfactory reticulocyte response in all cases observed, and that after treatment consisted of from 1 to 2 c cm of the concentrated extract repeated usually at intervals of a week, though in a few cases strict adherence to this seven day interval was not observed Cases 4 and 11 were complicated by infections, and had more frequent and larger doses In 13 of the remaining 14 cases the red cell count reached 4,000,000 per c cm or more in 21–35 days except in one case where it reached 4 400,000 in 49 days The other patient receiving a total of 9 c cm reached 3,900,000 in 35 days Four patients had subsequent doses of iron by mouth for two or three weeks The later progress of all the cases was satisfactory, and except for Cases 4 and 16, they form the bulk of the cases subsequently observed on maintenance treatment

MAINTENANCE TREATMENT

Since the introduction of liver therapy the satisfactory maintenance of cases of pernicious anæmia undergoing treatment has always been recognised as of paramount importance, no matter what the route of administration So far as the blood is concerned it is agreed that the red cell count and the percentage hæmoglobin should be maintained if possible at normal levels This is especially desirable if neurological complications are to be prevented, or if they are present, arrested and improved. It is important to observe that the subjective sensations of the anæmic patient are particularly fallacious as a guide to improvement, for many once severely anæmic patients will state that they are perfectly well in every respect with red cell counts considerably below normal values

A study of maintenance treatment must necessarily be prolonged, and such work is more tedious and much less dramatic than the observations of the immediate results of treatment in well developed and severe anæmic states of new or relapsed cases It is, however, probably equally important

The hæmatological criteria adopted during these observations were that the red cell count should be at least between 4,500,000 and 5,000,000 per c cm and that the hæmoglobin should be at or above 95 per cent A fall in the red count below 4,500,000 was regarded as suggestive of early relapse, and indicated increased dosage of the liver preparation More reliance was placed on the cell counts than upon a fall in the hæmoglobin percentage, because although a fall in hæmoglobin is usually accompanied by a fall in red cells, these two observations are not always strictly paralleled in the initial phases of relapse When such a fall in the blood was observed during maintenance a careful scrutiny for complicating factors, particularly of an infectious type, was always made In their absence it was assumed that either the amount of substance given was insufficient, or, in the scheme of treatment adopted here, that the intervals between doses were too long and had therefore to be reduced

All the acute cases mentioned in Table I, with the exception of two, were kept under continuous observation for periods varying from twelve months upwards In addition, 6 other cases of pernicious anæmia previously maintained satisfactorily on other preparations were transferred to the new product and were similarly observed, again in all cases for periods exceeding twelve months In Table II are shown in all 20 cases In addition, there were three other cases not included in this table in whom the development of severe intercurrent illness rendered them unfit for comparison with the other cases in that the scheme of dosage had to be entirely and permanently abandoned

The following plan with regard to dosage and the time intervals between injections was adopted

When the new cases or those in relapse were treated and had reached counts at or above 4 500,000 red cells per c cm they, and those transferred cases were seen in the out-patient clinic once every 3 weeks They all received 1 c cm of a concentrated liver extract intramuscularly, and were seen every 3 weeks in most cases four times in all, covering a period of 12 weeks If the blood was still satisfactory the interval was then increased to 4 weeks, these cases being seen three times over a further period of 12 weeks Again if the blood was satisfactory the interval was increased to 5 weeks, and thereafter at suit able intervals to 6 7 and in one case even 8 weeks A fall in the red count was met not by increasing the amount of liver given but by shortening the time interval between injections A fall in the hæmoglobin without significant change in the red cells was met by prescribing iron by mouth for two or three weeks and if the red count and hæmoglobin showed no improvement the interval for the liver injections was again shortened

After experimenting thus for more than a year with most of these cases it was possible to arrive at an interval between injections satisfactory for each case using always a fixed dose of 1 c cm The only exception to the rule of a fixed dose of 1 c cm in the cases shown in Table II was made in two cases indicated who at one stage developed influenza like infections and to each of whom a double dose of the liver substance (2 c.cm) was given on one occasion

TABLE II

Cases Maintained on 1 c cm. Concentrated Liver Extract

Case	Number of 1 c cm doses in weekly (w) intervals of—						EMI in weeks	Time in weeks observed on EMI
	3 w	4	5 w	6 w	7 w	8 w		
1	4	3	2	2	1 + (4)		7	35
2	4	3	2 + (4)	1			5	20
3	4	3	3	2 + (5)	1		6	30
5	4	3	2	2 + (6)	2		6	30
6	4	3‡	+ (7)	1			5	35
7	4	3	2	2	2	(4)	8	32
†8	4	3 + (11)	2				4	44
9	4	4	3 + (5)	1			5	25
10	3	3		2	6		7	42
11	4	3 + (10)	2				4	40
12	4	3	2	2 + (6)	1		6	36
†13	4 + (11)	3					3	42
14	4	3 + (8)	*				4	32
15	4	3 + (9)	1*				4	36
17	2	3	2	3 + (6)	1		6	30
†18	3	3 + (8)	2				4	32
19	2	3	2	2 + (7)	2		6	42
20	3	3 + (9)	2				4	38
†21	4 + (1)	3					3	36
22	4	3 + (8)	2 ‡	2			5	32

Figures in parentheses show period maintained on fixed 1 c.cm dose *after* this had been determined by trial.
EMI = Established maintenance interval
Trial period interval found too long by R.B C fall interval therefore reduced.
† Interval reduced on account of paræsthesiæ; blood satisfactory
‡ Influenza; double dose here on one occasion

Results—The established maintenance interval on a dose of 1 c cm was found in 17 cases by increasing the interval until evidence of slight remission was obtained In 3 the established maintenance interval was arrived at without any evidence of slight relapse and it is possible that in the future further extensions of the interval may be safely considered It will be seen that in 2 cases the established maintenance interval was three weeks in 6 four weeks in 4 five weeks, in 5 six weeks in 2 seven weeks and in 1 eight weeks The period of observation up to the time of compiling these records (April 1937) has varied from 20 to 44 weeks

There were 9 cases who showed some evidence of subacute combined degeneration of the cord but in 5 the symptoms were quite trivial and had disappeared by the time the patients were transferred for maintenance treatment In 4 other cases however persistent paræsthesiæ and some loss of postural sense were found extending into the time when the blood-level was satisfactory

SUBACUTE COMBINED DEGENERATION

From one point of view the presence of subacute combined degeneration of the cord in cases undergoing treatment tends to complicate clear deductions as to the value of a given preparation inasmuch as it is usually maintained that the control of neurological complications depends upon the utilisation of optimal amounts of liver substance Hence the inclination of the physician is to give far in excess of what is required to maintain the blood at its optimum

It has already been mentioned that 5 cases among the severely anæmic patients had transient peripheral paræsthesiæ, doubtless due to mild peripheral nerve disturbance anæmic peripheral neuritis these quickly lost the symptoms and no nervous disturbance could be discovered at the time of discharge to the out patient maintenance clinic The remaining cases to be discussed in this section fall into two groups

There were four patients Cases 8 13 18 and 21 (the first two appear in Table I; the others are cases transferred to this preparation for maintenance) treated in the acute stage in whom persistent paræsthesiæ and some loss of postural sense were found at the time of transfer to the out-patient maintenance clinic. In none of them was the plantar response ever known to be extensor nor was there any other evidence of central pyramidal disease All four cases have responded satisfactorily from the neurological point of view as well as in the condition of the blood. They have lost their subjective and objective sensory disturbance except in one case where there is still slight numbness of the first and second fingers of the right hand The dosage of the active liver preparation which has maintained these patients in their present satisfactory condition for a period of more than six months has been:—

Case	Dose cm	Interval in weeks	Observation in months
8	1	5	9
13	1	4	10
18	1	3	8
•1	1	3	9

In all four cases the blood has never at any time fallen below 4 500 000 red blood cells per c.cm and has usually been above 5 000 000

There was another group of four new cases not included in the previous tables, in whom there was little or no anæmia, and whose chief complaints were those of severe paræsthesiæ ataxia or spasticity and in whom routine examination of the blood revealed slight, and in two cases only very slight, evidence of pernicious anæmia. The general features of these cases were that their history of the development of paræsthesiæ ataxia and difficulty in walking extended from one to three years They all had complete achlorhydria, and they may be considered as cases primarily neurological in their clinical aspect I am indebted to Dr H G Garland for the histories of two of these cases

CASE 23 —A female aged 60 with one year s history of paræsthesiæ and ataxia loss of vibration and postural sense in the legs absent knee and ankle jerks bilateral extensor plantar response quite unable to stand or walk. Red cells 3 800 000 per c cm. hæmoglobin 76 per cent She had 1 c cm. of the concentrated liver extract daily for 6 weeks then 1 c.cm twice weekly for 2 months and at the end of this time was able to walk upstairs with assistance but still had paræsthesiæ She continued to have 1 c cm twice weekly for 4 months, and is now able to mount stairs unaided. The knee- and ankle-jerks have returned and the plantar responses are now definitely flexor She is now having 1 c cm weekly The red cell count has been satisfactory throughout from the beginning of treatment

CASE 24 —A male, aged 64, who complained for eighteen months of paræsthesiæ and a cold, dead, aching in the legs, and of tingling numbness in the fingers with clumsy action of the hands On examination the knee and ankle jerks were not obtained There was loss of position and vibration sense both in the hands and feet The blood count was red cells 4,600,000, hæmoglobin 88 per cent There was histamine achlorhydria The cerebro spinal fluid was normal After six weeks on a daily injection of the concentrated liver extract there was pronounced subjective improvement The tendon reflexes could now be obtained, but there was still slight paræsthesiæ Further treatment consisted of 1 c cm twice weekly, the last blood count being red cells 5,100,000 per c cm , hæmoglobin 98 per cent

CASE 25 —A male, aged 50, seen fifteen months ago *complaining of difficulty in walking and unsteadiness of gait*, and on questioning admitted to feelings of numbness in the hands and feet Although clinically his appearance did not suggest anæmia, his red cell count was 3,600,000 per c cm , hæmoglobin 82 per cent , colour index 1 1 He received 5 c cm of the concentrated liver extract spread over a period of four weeks, at the end of which his red blood count was 4,900,000 per c cm and hæmoglobin 90 per cent He still complained of some unsteadiness in his gait, his knee and ankle jerks were very sluggish, and his plantar response equivocal He has continued to have 2 c cm of the extract at four weekly intervals His blood has never fallen below 4,500,000 per c cm , his hæmoglobin never below 96 per cent He has slowly improved in his walking, is much more steady, and his tendon reflexes are normal His plantar response is flexor

CASE 26 —This is a case which, in spite of intensive liver therapy at all times adequate to maintain the blood at normal levels, continued to retrogress He was an organ builder, aged 58, and complained of aching pain down the front of the right leg and later similar discomfort in the left He began at times to walk clumsily as if drunk, and he became clumsy with his hands, in the use of his knife and fork, and was eventually unable to do his rather delicate work concerned with the adjustment of organ pipes He had physical signs of subacute combined degeneration of both spastic and ataxic type, with extensor plantar responses His knee jerks and one ankle jerk were brisk, but the ankle jerk on the right side was obtained only with difficulty When first seen his blood count was 4,400,000 red cells per c cm , hæmoglobin 88 per cent , colour index 1 white cells 5700 per c cm There was slight megalocytosis of the red blood cells, histamine achlorhydria and a normal cerebro spinal fluid Before treatment could be instituted in this case the patient developed a severe carbuncle on his back requiring in patient surgical treatment for six weeks During this time he was given 2 c cm of the concentrated liver extract daily for two weeks, and then 1 c cm twice weekly, his blood count being 5,100,000 per c cm , hæmoglobin 96 per cent When he was able to get up his unsteadiness of gait had increased, and it was only with considerable assistance that the patient was able to walk *At this stage the concentrated* liver extract treatment was augmented with vitamin B_1 in the form of two ampoules of Betaxan daily The carbuncle has been completely healed for four months, but the patient is still deteriorating, and with increased ataxia and incoördination and loss of sphincter control has become bedridden

HYPOCHROMIC ANÆMIA

On theoretical grounds there is strong objection to the haphazard use of liver products in hypochromic anæmia states which ordinarily respond to large doses of iron In the following six cases, however, this liver product was used, because in the treatment of their anæmia over many years with large doses of iron, satisfactory improvement was not achieved The hæmoglobin level remained persistently low in spite of continuous massive iron therapy In two cases, the use of more than 30 grains of ferri et ammon cit three times a day was impossible owing to the tendency of the drug to cause gastro intestinal disturbances, particularly diarrhœa

In the first case there was a colour index of 0 6, and the hæmoglobin level was never raised above 32 per cent over a period of three and a half years In both cases massive iron therapy had been repeatedly employed They had been fully investigated as in patients, and there was no evidence of any form of blood loss such as chronic gastro intestinal hæmorrhage, nor was there any history of a toxic agent which could be conceived as operating to produce an aplastic state of the marrow The full hæmatological investigations did not suggest any unusual blood disorder In both cases there was achlorhydria To each of the patients 1 c cm of the liver concentrate was given at fortnightly intervals The iron mixture was not discontinued, but simultaneously administered. Slowly the hæmoglobin began to rise, accompanied by an improvement in the state of the patients, and after six months' treatment the hæmoglobin level had risen, in the first case to 66 per cent , and in the second to 65 per cent Having regard to the chronic and long continued ill health of these patients, to the extremely low hæmoglobin values, and the resistant character of the disorder to ordinary iron treatment, these elevations of hæmoglobin were a notable achievement, and as a result of it the patients, although strictly speaking still anæmic, are now in a much better condition than they have been for many years

The other four cases are examples of hypochromic anæmia following gastric operations * In these patients the story has been much the same Iron therapy has never succeeded in raising the hæmoglobin above 50 per cent

In two of them there was considerable intolerance to large doses of iron, which from time to time had to be omitted Under the influence of the concentrated liver extract again the hæmoglobin value has been elevated, in the first case to 65 per cent , in the second case to 72 per cent , in the third case to 78 per cent , and in the fourth case to 68 per cent Accompanying this improvement in the blood was an improvement in the symptoms—i e , excessive tiredness and lack of energy, and the physical activities of the patients have been much increased Having long adapted themselves to the previous low blood values, they are now in a relatively healthy condition

CONCLUSIONS

A concentrated whole liver extract for intramuscular injection has been systematically tested among cases of pernicious anæmia Relatively small doses rapidly produced an adequate reticulocyte response followed by a rapid regeneration of red cells and hæmoglobin among 16 severely anæmic patients Satisfactory maintenance treatment has been observed among 20 cases of pernicious anæmia on small dosage at various intervals between injections The need for careful control of maintenance cases by regular blood counts is shown by the variation in the time interval between injections in the different cases, the time interval between 1 c cm doses ranging from three to eight weeks Because of this variation it is impossible to fix a standard dose and interval applicable to every case Intercurrent infection nearly always demands an increased amount of active substance to maintain satisfactory blood levels

All the cases with subacute combined degeneration of the cord, except one which was complicated by severe infection, have improved It is suggested that the "primary neurological" cases, with evidence of nervous disturbance much in advance of the anæmia,

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* I have previously reported a number of similar cases in a review of 40 examples of anæmia following gastric operations (Hartfall 1934)

(*Continued at foot of opposite page*)

(*Continued from previous page*)

may require larger doses irrespective of the satisfactory state of the blood

The improvement of certain cases of resistant hypochromic anæmia suggests that the preparation may have some specific stimulant effect upon the metabolism of iron

I am indebted to the Lederle Laboratories for all the supplies of the concentrated liver solution used throughout these tests and to Dr E F Roberts and Dr G W Clark for information relating to its preparation and composition I wish to thank Dr G Bonsor pathologist to the Leeds Public Dispensary and Hospital and to Dr C. Polson pathologist to St James's Hospital Leeds for several of the blood counts done among acute cases whilst in patients in these hospitals.

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BRITISH MEDICAL ASSOCIATION

SECTION OF PATHOLOGY, BACTERIOLOGY AND IMMUNITY

Prof S P BEDSON F R S (London) presided over this section and a discussion on

Influenza

was opened by Dr C H. ANDREWES (London) He proposed he said to show that a definite disease could be separated out from the scrap heap of epidemic upper respiratory tract infections by recognition of its virus ætiology He described the course of the disease produced in ferrets by intranasal instillation of saline garglings from patients in the early stages and the subsequent infection of other ferrets by filtered emulsions of the turbinates. Serial passage could give rise to a virus causing extensive bacteriologically sterile lung lesions. This virus would infect mice causing lung lesions only; and sometimes the recently isolated strains could be adapted to infect mice. Virus might be present in mouse lungs which appeared normal The evidence that this virus was the cause of human influenza epidemics was (1) the frequent recovery of it from patients in some epidemics and failure to recover it from normal persons or in sporadic cases; (2) its presence in epidemics from all over the world (3) the acquisition of virus neutralising powers by the serum of convalescent patients (4) successful infection of the human subject and (5) the failure of Pfeiffer's bacillus in an ætiological rôle.

Immunologically ferrets developed antibodies after recovery; these waned after six months Although infection would occur only by the intranasal route, virus given subcutaneously would produce some immunity The waning immunity of previously infected ferrets could be made complete by one subcutaneous dose of vaccine. In mice, protection against the lung lesions for ten weeks could be given by two injections Virus inactivated by 1 in 5000 formaldehyde was an effective antigen. In vaccinating human beings it was preferable to use such an inactivated virus a single dose caused a satisfactory rise in antibodies averaging 25 fold without undue local reaction An attempt to test the value of the vaccine last December had been vitiated by the arrival of the epidemic within a few days of the injections. A new complication had arisen with the discovery that all strains of the human influenza virus were not serologically identical though showing considerable antigenic overlap It might be hoped however that an effective prophylactic would be found.

Dr C H STUART HARRIS (London) described the clinical features of four localised epidemics of upper respiratory infection in which the virus could not be implicated and of the epidemic of December 1936 from which virus was isolated. He thought that in the latter a clinical entity could be defined, because of the uniformity of the picture and because of the differences between it and the non virus outbreaks He pointed out that the symptoms, the duration and type of pyrexia and the lung changes observed in the virus disease in man and in the ferret presented certain similarities. Human cases with frank pneumonic signs usually ceased to yield virus, and pneumococci were then often found While there was some serological evidence of the occurrence of subclinical infections in no case with gastro intestinal symptoms only had virus been demonstrated. Compared with the non virus group of infections the influenza epidemic tended to a more explosive onset and a rapid course, with small secondary waves; the individual cases were more uniform in clinical type than in the febrile catarrhs. The symptoms of onset were more often constitutional than respiratory in influenza; the symptoms during the course of the two diseases were less easily distinguishable The blood count was of no help in diagnosis.

Dr R W FAIRBROTHER (Manchester) said that diagnosis was easy during epidemics but sporadic cases were difficult In considering immunisation it should be recognised that many people have some antibodies, and he recommended testing for antibodies and vaccinating those with a low titre Observation had shown that it was these who would develop influenza. Of the two serological diagnostic tests the complement-fixation test was more useful than the neutralisation test requiring the use of fewer mice. The results of the two tests did not always agree On centrifuging a filtrate yielded two antigenic substances a soluble substance, non infective and not antibody producing but causing complement fixation and an infective deposit, presumably containing elementary bodies, which induced antibody formation but no complement fixation. The activity of the deposit was just destroyed by a temperature of 50 C. but not by phenolisation Two doses of a preparation of this gave protection in mice. As mouse tissue was undesirable in the vaccine virus grown on egg embryo had been tried this was effective in mice, but not satisfactory in ferrets. No observations had yet been made in man Immunity was only of brief duration and he repeated that when an epidemic was expected the vaccine should be used for those persons found to have a low antibody titre by the complement fixation test.

Dr J G SCADDING (London) spoke of the lung changes in influenza He had observed a series of cases during the last epidemic, mostly with lung involvement The virus had been isolated from four of these A comparison was made between the gross bacterial flora of the sputa in this influenzal group and that of a control group composed of all the non influenzal sputa examined in the laboratory during the same period. No significant difference between the two groups was found. On analysing the influenzal series into groups according to the nature of the pulmonary lesion significant differences between the bacterial flora of the various groups were found pneumococci predominating in those with definite consolidation. In a fatal case of fulminating pneumonia both virus and *Staphylococcus aureus* had been demonstrated in the lung He concluded that the lung changes were the result of both bacterial and virus infections, in varying combinations of severity Consideration of the histology of the lungs in seven fatal cases gave some support to this hypothesis

The President said that the differences between the various strains of virus might be of academic interest only Differences between the neutralisation and complement fixation tests had been found with the psittacosis virus also

Dr C E van Rooyen (Edinburgh) said viruses commonly rendered cells very liable to secondary infection, quoting those of ectromelia and psittacosis as examples He had failed to obtain complement fixation with the elementary bodies of vaccinia

Dr Andrewes, in reply, said that the difference between strains of virus was evident not only in mouse experiments, but also in the vaccinated human subject In prophylactic schemes, a difficulty was to forecast the imminence of an epidemic A test for this would be useful

Dr Fairbrother, in reply, said that the complement fixation test was adapted to the facilities of the small laboratory All strains produced the same antigen for this test Variations in strains had been produced by animal passage If a large enough dose were given, a polyvalent vaccine would not be needed.

Staphylococcal Infections

Prof J W Bigger (Dublin) opened a discussion on staphylococcal infections in man He began with a brief account of recent advances in knowledge of the staphylococci and their toxins, leading on to the importance of the exotoxins, the methods of culture necessary for their production, the possibility of immunisation by toxoid, and the preparation of an effective antitoxin He outlined the present state of knowledge of the constitution of the exotoxin, and discussed the possibility of hypersensitivity to the toxin He commented on the absence of reference to opsonins in the last fifteen years, he still thought there might be some antibacterial immunity Staphylococcal infections, he said, might be endogenous or exogenous, general infection might follow, and there might be some effect on sugar metabolism The factors determining infection were the virulence of the organism, trauma, the level of immunity, and local conditions such as the state of the skin glands Thus different levels of antitoxin were needed in different subjects In treatment locally, rest was most important Active immunity could be produced by toxoid which must include α toxin, leucocidin, and probably β toxin Control by hæmolysin titration was unnecessary Vaccine might be useful, he used it in the form of washed organisms, with the toxoid, to increase antibacterial substances

Dr H J Parish (Beckenham) said that laboratory evidence confirmed the value of toxoid and antitoxin Most vaccines contained little toxin, and experimentally there was little justification for their use The antitoxin in common use neutralised both hæmolysin and leucocidin The early clinical results from toxoid had been encouraging, but relapses might occur in spite of a high antitoxin level In sycosis, results had been poor, they had been better in furunculosis Knowledge of the toxins was incomplete, and the toxoid might lack some essential antigen Turning to chemotherapy Dr Parish produced experimental evidence of the efficacy of sulphanilamide administered orally in mice infected intraperitoneally with virulent strains of staphylococci. The results were comparable with or superior to those obtained with antitoxin Mice surviving the acute stages were often found to have abscesses in various organs The results of sulphanilamide therapy were comparable with those obtained in hæmolytic streptococcal infections Delay in instituting therapy much reduced its efficacy He concluded that sulphanilamide may be of value in staphylococcal infections

Dr Eileen Bartley (Belfast) gave a report on 68 cases of various superficial staphylococcal infections treated with toxoid The best results were obtained in cases of styes and furunculosis, results were poor in sycosis and acne The average anti hæmolysin titre before treatment was 1 unit, and after treatment for eight weeks, 8 units, there was no correlation between the rise in titre and the clinical results No further rise in titre occurred with further treatment The toxoid was of some value, but not entirely satisfactory

The President said that three questions arose whether antitoxic immunity was the whole story, the importance of hypersensitivity, and the value of sulphanilamide Staphylococci might be capsulated, with a capsular antigen.

Dr S C Dyke (Wolverhampton) agreed that antihæmolysin titre was of no clinical value, and its estimation was therefore unnecessary He had obtained good results with vaccine Prolonged observation had convinced him that there was no special relation between diabetes and staphylococcal infections

Dr Eileen Hickey (Belfast) recounted a recent case of staphylococcal septicæmia controlled with Prontosil, in which a recrudescence occurred several times on omitting the prontosil.

Sir Thomas Houston (Belfast) said that he still believed in the efficacy of the vaccine He stressed the importance of accurate bacteriological diagnosis

Dr H G Dain (Birmingham) urged the importance of focal infection in maintaining chronic staphylococcal infections

Colonel A H Proctor (London) quoted two cases of osteomyelitis which developed furuncles in the presence of a very high antihæmolysin titre He had attempted without success, to obtain some help clinically from estimation of the bactericidal power of the blood. He thought that secondary infection of staphylococcal lesions was a real danger, quoting a case in illustration.

Dr N C Graham (Belfast) supported Sir Thomas Houston's plea for accurate bacteriological diagnosis

Mr A Felix, D Sc (London), said that too much stress had been placed upon antitoxin titres

Prof Bigger, in reply, said that variations in results of vaccine treatment were due to variations in toxin production with different culture methods He thought the α hæmolysin had received too much attention, other constituents, especially the leucocidin, might be more important

SECTION OF PHARMACOLOGY AND THERAPEUTICS

With Prof E B C Mayrs (Dunmurry), the president, in the chair, a discussion on

Individual Variations in Response to Drugs

was opened by Prof A J Clark F R S (Edinburgh) He said that the actual range of individual variation in the response of patients to various therapeutic methods had not been very fully stated Most of the work had been on animals and certain conditions must be fulfilled before the results can be relied upon

The animals must be a uniform population from inbred stock and similar in sex, weight and age. The nature of the diet was also important: for example, vitamin deficiency increased the susceptibility of animals to many drugs. Even when all these precautions were taken animals still showed a wide variation in their response. In the case of strychnine poisoning it had been shown that of adult animals of mixed sexes 4 per cent. were killed by about a quarter of the dose that 4 per cent. survived.

Prof. Clark then dealt with various mathematical conceptions involved in the calculation of individual susceptibility from the results obtained on small groups. With most drugs the range of variation was relatively narrow so that a dose equal to 40 per cent. of the mean lethal dose would not kill more than 1 in 10 000 individuals. With dysentery toxin, however, the variation was so great that a very small fraction of the mean lethal dose sufficed to kill susceptible individuals. In the case of human beings very little was known about variations in lethal doses. The animal experiments, however, were of service in that they showed that the mean lethal dose is a quantity that cannot be measured accurately. Rather more was known regarding variations in the effect of narcotics. It should be expected that in 1000 cases the most resistant individual would require about four times the dose needed by the least resistant. Therefore those methods in which the dosage can be adjusted to the individual response, such as the administration of volatile anæsthesia on a facial mask, were to be preferred to those in which a standard dose has to be given to all patients, as, for example, a basal dose of Nembutal calculated from the weight of the patient. With alcohol there were big differences between the results obtained with animals and those obtained with human beings. Animal experiments gave a relatively small variation in response to alcohol. In human beings a concentration of alcohol in the blood of 1·2 mg. per 100 c.cm. produced intoxication in 50 per cent. of cases. At the other end of the scale 1 person in 35 was not intoxicated with 4·5 mg. per 100 c.cm. No doubt a proportion of the human population had an acquired tolerance. In regard to massive digitalis therapy the evidence suggested that in different individuals at least a fourfold range in the quantity of the drug would probably be required to produce a given effect. Consequently it appeared very improbable that any method would be found of judging a priori the dose needed accurately enough to ensure that the average therapeutic dose would not produce severe overdosage in the occasional patient who was abnormally sensitive. These exceptional people were undoubtedly a nuisance from the clinical standpoint, but their existence must be recognised.

Prof. J. H. **GADDUM** (London) dealt with the method of determining what proportion of the average lethal dose is safe for every individual by extrapolating a curve whose shape has been determined for a small population. This method gave ridiculous results when applied to the highly skewed curves sometimes obtained. These curves could, however, usually be converted into sigmoid curves if they were plotted on the logarithmic scale rather than the arithmetic scale. He said that the variability in response of a given population of rats to one drug might be quite different from their variability to another drug.

Dr. **GEORGE GRAHAM** (London) dealt with variations in response of patients to insulin. He described various types of local reaction. Some of these were due to the preparation not being isotonic, but this type of reaction had been almost abolished by the universal acceptance by manufacturers of the importance of isotonicity. Other local reactions were due to unknown components of individual preparations. They could usually be avoided by changing the brand of insulin but sometimes the only course was to desensitise the patient. It was impossible to tell even approximately from the height of the blood-sugar in a given case of diabetes what dosage of insulin would be required for stabilisation.

Dr. P. **MCCARVILL** (Dublin) said that a considerable part of a dermatologist's time was taken in treating the effects of unexpected responses to drugs administered externally or internally. The reason that the dermatologist saw so many cases was because he dealt with those cases in which unusual response was manifested externally. The cells of the skin could be sensitised to a wide variety of substances, even to relatively simple substances. Primula antigen, for example, had a molecule very much smaller than a protein molecule but yet it had been shown that 100 per cent. of people could be sensitised by rubbing concentrated solutions into the skin. Sensitisation might take years to develop and it might be transferred. Most reactions could be avoided by testing for undue sensitivity by means of the patch test or the scratch test. The development of exfoliative dermatitis from gold therapy could almost always be avoided if certain warning signs were carefully watched for.

The **PRESIDENT** said it would be a great advance if some simple means could be devised in practice for testing quantitative differences in response. He wished to draw attention not only to variations in susceptibility but also to variations in resistance to a drug. Some patients who appeared not to show any favourable response to the pharmacopœial dose required larger doses.

Dr. P. C. P. **INGRAM** (Newport) referred to variations in susceptibility to the arsenobenzols. A lot of reactions had been prevented by more efficient methods of administration and a lot more could be avoided by insisting on starvation before and after treatment and on the patient's resting for some hours after an injection.

Dr. J. F. **BROCK** (Cambridge) asked whether susceptibility to drugs such as that shown by development of agranulocytosis after taking amidopyrine should be regarded as inherited or as induced.

Prof. H. C. **RAPER** (Manchester) discussed responses to mustard gas in relation to Dr. Brock's question. Certain people had been found to be five times as susceptible as others to this poison. This must be an inherited susceptibility because none of the subjects had previously been exposed. On the other hand people used repeatedly for testing batches of mustard gas had developed hypersensitivity which was induced.

Prof. **DAVID CAMPBELL** (Aberdeen) held that the attempt to prescribe digitalis in terms of the patient's weight was a spurious form of accuracy because it ignored individual variation. The same applied to basal anæsthetics. He appealed against the use of mixtures of drugs, such as a combination of a barbiturate and an analgesic, and held that drugs should be used individually and the dose increased until an effect was obtained.

Iron

Dr. **BROCK** read a short paper on iron therapy in hypochromic anæmia. He pointed out that the hypochromic anæmias which responded to iron therapy had all the characteristics of iron deficiency states The only difficulty in accepting iron deficiency as the main causal factor had been the fact that very large doses were required The work of Health, Strauss, and Castle on the response of such patients to injections of iron had led to the assumption that the reason why large doses required to be given by mouth was that iron was very poorly absorbed from the human gastro intestinal tract The balance experiments of Brock and Hunter, confirmed by Fowler and Barer and by McCance, made it clear that this explanation was inadequate Iron had been found to be very well absorbed from the human gastro intestinal tract The difficulty therefore, still arose as to why it was necessary to give large doses There could be no doubt about the correctness of this conclusion from clinical experiments He suggested that the explanation probably was that one group of cases represented a simple state of iron deficiency, which could be cured by small doses, whereas in the other group there were factors, not yet identified, which made large *doses of iron necessary There was no clinical way of* differentiating between the two groups, so that the average effective dose must still be regarded as a large dose

SECTION OF ANATOMY, PHYSIOLOGY, AND BIOCHEMISTRY

AT a meeting of this section Prof JOHN MORLEY (Manchester) opened a discussion on

Visceral Pain

He would limit his remarks, he said, to the mechanism of visceral pain from the diagnostic aspect, and deal for the most part with pain originating in the gastro intestinal tract This problem was a peculiar one, inasmuch as the gastro intestinal tract was quite insensitive to the stimuli—cutting, burning, &c —which caused pain when applied to the somatic nerves, yet it was supplied with afferent nerve fibres capable of causing direct visceral pain in response to an adequate stimulus The one stimulus adequate to produce this direct visceral pain in the gastro intestinal tract appeared to be tension on the afferent nerves in its muscular coats, and this tension was usually caused by spasmodic and exaggerated peristaltic contraction. The afferent nerves supplying the insensitive intra peritoneal viscera showed no anatomical features distinguishing them from the somatic nerves, but their physiological limitations were so striking that we are justified in regarding them as a separate system, to which we may give the name "viscero sensory nerves"

The features of visceral pain can, Mr Morley continued, be studied in its purest form in strangulation of a small knuckle of the lower small intestine in a femoral hernia. The pain here occurs in intermittent spasms lasting half a minute or so, and repeated at regularly recurring intervals If we examine a patient suffering from such a visceral pain, we find that it is felt as a central pain, not on the surface of the abdomen and quite vaguely localised at or above the umbilicus There is no superficial hyperalgesia, no deep tenderness, no muscular rigidity On the other hand in acute appendicitis, the site of the pain in the right iliac fossa, with its corresponding area of deep abdominal tenderness and reflex muscular rigidity varies from case to case, with the position which the appendix happens to occupy The nerves of the sensitive parietal peritoneum must receive the stimulus that gives rise to pain and tenderness in the superficial parts of the abdominal wall, and to the associated reflex muscular rigidity, as a "peritoneo cutaneous radiation and a peritoneo muscular reflex" This form of reflex pain is illustrated by stimulation of the phrenic nerve terminals below the diaphragm, when the patient feels the pain in the region of the descending branches of the third, fourth, and fifth cervical nerves, supplying the skin of the supra acromial region Infiltration with novocain of this region of the skin either abolishes or greatly modifies the referred pain

The theory that is commonly held to explain this form of referred pain is that of James Ross (1888) the theory of an irritable focus in the spinal cord There are, said Mr Morley, objections to this theory which is completely unsupported by physiological evidence Recent experimental work on action currents, combined with division of the posterior nerve roots, seems to offer a more rational explanation of this peritoneo cutaneous radiation of pain Barron and Matthews (1934–35) have shown that some 40 per cent of the posterior root fibres of the spinal nerves can carry centrifugal impulses. *Of these a large proportion start in a peripheral sense* organ and run to the cord, where one (or more) collaterals pass a longer or shorter distance up or down the cord, leaving it again by a different rootlet from that containing the entrant fibre It then passes to the periphery, often to a point distant from the original sense organ These workers found that when a single afferent fibre in a posterior spinal rootlet is stimulated, the impulse emerges through its efferent collaterals in other rootlets with no more delay than can be ascribed to conduction time This confirms the belief that the efferent fibres referred to are collaterals of the posterior root ganglion cells, and that no synapse is interposed in their course within the central nervous system Yet despite this absence of synapse the impulses are certainly inhibited or modified within the central nervous system, since discharges enter the cord as a continuous series of impulses and leave it as an intermittent series These facts appear to give the key to the mystery of peritoneo cutaneous radiation of pain, without any violation of the law of forward conduction associated with the names of Bell and Magendie And it would appear probable that, on stimulation of the phrenic nerve, efferent fibres in the posterior root run down to the skin supplied by the third, fourth, and fifth cervical segments, and there liberate a chemical metabolite which stimulates the endings of adjacent pain fibres in the skin This conception of pain, due to the action of a chemical substance on the sensory nerve endings, has been made familiar by the work of Sir Thomas Lewis But it is plain that the nocifensor system of nerves postulated by Lewis (1937) cannot be held responsible, since the hyperalgesia produced in his experiments took many minutes to develop, and persisted many hours, whereas the shoulder pain and its associated hyperalgesia develop instantly when the phrenic nerve is stimulated, and when the stimulus is removed they disappear almost at once *In the* pain we are considering the reaction that occurs in the skin is both rapid and reversible

This study of phrenic nerve pain leads to the conclusion that a similar peritoneo cutaneous radiation occurs in the superficial nerves of the anterior abdominal wall, when the underlying parietal peritoneum receives a painful stimulus from an inflamed viscus Infiltration experiments with novocain again confirm this conclusion From this discussion it seems clear that a more precise definition of referred pain is required than that used at present, it should be held to mean pain felt at a point remote from the seat of stimulation, and we should limit the term referred pain' to pain resulting from stimulation of a somatic sensory nerve and referred to a remote part of the distribution of that nerve or of the segmental sensory distribution with which it is connected. Under this more precise definition of referred pain should be included pain radiating to the testis as a result of renal or ureteric colic, or felt in the end of the urethra from stimulation of the trigone of the bladder But the interior of the pelvis of the kidney and of the ureter is sensitive to mechanical stimuli as is the base of the bladder These organs are, therefore innervated with sensory nerves of a different physiological group from the afferent nerves of the gastro intestinal tract, since they respond to the common type of pain stimulus. It is not surprising therefore that they give rise, on stimulation to both viscero muscular reflexes and viscero-cutaneous referred pain.

The pain of angina pectoris and of aneurysm of the aortic arch could be abolished by injection of alcohol or by surgical excision of the upper five thoracic sympathetic ganglia or by division of the upper five posterior thoracic spinal roots According to J C White (1935) this pain was a viscero-cutaneous reflex and partly a true visceral pain.

DISCUSSION

Prof. B A McSwiney (London) described experiments in cats which showed that afferent fibres from the splanchnics ascend in the cord on the opposite side and partly on the same side of entry and reach the thalamus at least. These experiments illustrated the difference in outlook between the purely clinical mind and that of the physiologist The physiologist is able to demonstrate by mechanical means the physical transmission of impulses along nerve trunks in a way impossible by clinicians in the human subject.

Dr E P Poulton (London) described a series of experiments in which balloons were swallowed and dilated with air when pain was produced with further dilation the pain disappeared. He explained this result as follows there is first a preliminary contraction of the œsophagus which presses on the nerve endings producing pain The contraction wave passes and dilation of the œsophagus occurs removing the pressure from the nerve-endings Painful impulses are no longer sent along the afferent nerve fibres to the central nervous system

Prof. J R. Learmonth (Aberdeen) said there was evidence to show that pain might be due not only to disordered function but might be produced in the absence of such disorder He discussed the difficulties of dividing all the afferent fibres coming to the central nervous system from any viscus notably those from the genito urinary organs in human surgery He suggested the unwisdom of accepting too freely the results obtained from animal experiments often carried out under different conditions He drew attention to the wide spreading of the afferent nerves ; if section was not performed close to the viscus concerned, some of the fibres must necessarily be left untouched and painful impulses continue to be transmitted. Chordotomy had been used for the relief of intractable pain his experience had been that even at the higher levels of the cord the operation was by no means always successful.

REVIEWS AND NOTICES OF BOOKS

A Text Book on Mental Deficiency

Sixth edition By A. F Tredgold M.D F R C.P F R S E Lecturer on Mental Deficiency London University ; Consulting Physician to University College Hospital. London Baillière Tindall and Cox. 1937 Pp 556 25s

For this edition the author has not merely revised he has largely rewritten the material before him, and the book is now a complete and up to date text-book on mental deficiency covering ætiology psychology pathology diagnosis, treatment and legal procedure, and including also very necessary preliminary sections on normal psychology and the development of the child mind Dr Tredgold has not hesitated to alter his views of the psycho pathology of mental defect in accordance with developing knowledge. As regards inheritance however he adheres to his view that mental defect is due to an impairment of germ developmental potentiality the theory of "blastophthoria and refuses to accept the Mendelian theory even in the form in which multiple genes are postulated Probably on this point he has few followers, but neither side has yet fully proved its case

Dr Tredgold s views on moral defect have also changed While he still holds that one of the characteristics of the moral defective is lack of wisdom he gives equal prominence to inability to acquire the higher moral and social sentiments He seems to be more convinced than formerly of the rarity of the condition though he does not accept the view now held by many psychologists that no one is innately incapable of developing such sentiments and that therefore there are no moral defectives It is astonishing that he is not more critical of the legal definition of moral defectives in the M.D Acts. His distinction between vicious and criminal aments and moral defectives is just enough But the definition of the moral defective in the Acts really corresponds to Dr Tredgold s description of vicious and criminal aments, and it is only by a somewhat laboured argument that he is able to reconcile the discrepancies in classification

More space is given than in previous editions to certification under the Education Act a certification which Dr Tredgold rightly stigmatises as anomalous but it is questionable whether school medical officers would be wise to accept his advice to limit certification to children suffering from social as well as educational defect Such a policy would delay entrance to a special school until social defect could be safely diagnosed, often quite late in childhood, and in addition would tend to encourage the admission to such schools of many ineducables The real remedy as Dr Tredgold clearly recognises, is the abolition of educational certification and a widening of the portal of special schools to admit a larger group of retarded children. Dr Tredgold himself insists that social and educational defect do not necessarily coexist It is possible for mental defect in the social sense to be unrecognised and even unrecognisable in school and to become apparent only in adolescence

As a text book the work deserves high praise It gives a complete survey valuable to practitioners, to certifying officers both under the Education and M D Acts and to institutional medical officers Its illustrations are excellent many of them recent and the writing has a charm rare in medical text books

Operative Surgery

Fourth edition By J SHELTON HORSLEY, M.D , LL.D , F.A C S , Attending Surgeon, St Elizabeth's Hospital, Richmond, Va , and ISAAC A BIGGER, M.D , Professor of Surgery, Medical College of Virginia, Richmond, Va London Henry Kimpton 1937 Pp 1385 63*s* two vols

IN the preparation of this fourth edition of his book Dr Horsley has had the assistance of Prof Bigger and four of his junior colleagues, and the additional material has necessitated publication in two volumes It is extraordinary in a work of this bulk to find no guidance in the selection of cases for surgical treatment, no advice about the indications and contra indications for any particular procedure, and no warning of the risks peculiar to any given operation and how to avoid them It is in fact a long catalogue of operations, the important steps of which are briefly described and beautifully illustrated with numerous drawings by Miss Helen Lorraine

The effect of grafting new chapters by specialists on to an old book by a general surgeon has been to emphasise certain subjects which deserve less space and are of less importance than many of the procedures which may still be regarded as general surgery It must be noted, however, that this new material, though upsetting the balance of the work, does greatly enhance its value, and the numerous references to papers on special subjects facilitate the more detailed study of the recent advances in operative surgery

There is no doubt that the information which these volumes contain could profitably have been condensed into a much smaller space, the illustrations too might with advantage be pruned of unnecessary ones and those which show obsolete or faulty technique It is to be hoped also that in future editions consideration of the problems of the general surgeon as well as those of the specialist may be brought up to date

Skin Diseases in General Practice

Third edition By H HALDIN DAVIS, D M , M A Oxon , F R C P , Consulting Dermatologist to the Royal Free Hospital, &c London Humphrey Milford, Oxford University Press 1937 Pp 400 17*s* 6*d*

FIRST published in 1913, this manual has proved its utility to a generation of practitioners and still makes an individual appeal The first five chapters are given to considerations on diseases due to pyogenic cocci, eczema, syphilis, and eruptions of a widespreading character Chapters 6 to 10 describe dermatoses usually to be found in special areas—e g , the face, the limbs, the hands and feet, the nails, and the groins and genitals For teaching purposes this method has certain advantages, and the repetitions it entails, far from being tiresome, serve to impress the memory The therapeutic measures advised are succinct, practical and thoroughly up to date It would have been better, perhaps, if the cross references to these had been directed to the actual page and not only to the chapter in which they occur The descriptions of modern X ray apparatus and radium treatment are good, they do not assume the reader to be an expert physicist, and they are pleasingly free from confusing formulæ The real danger of harm to the operator from secondary and scattered X rays might be more strongly emphasised, and methods of protection more clearly defined Few practitioners realise fully the need of care in this respect More space might have been given to a discussion of dermatitis due to industrial and occupational causes, and a brief account of the Workmen's Compensation Acts, in the interactions of which most practitioners are concerned, would have been helpful

Quarterly Journal of Medicine

THE July issue contains the following papers —

The LIPOPENIA OF HYPERTHYROIDISM. By Eldon M Boyd and W Ford Connell (Queen's University Kingston, Ontario) Determinations of plasma lipid fractions in 43 cases of hyperthyroidism Values for neutral fat lie within the normal range, those for total lipid, total fatty acid, ester cholesterol, free cholesterol, and phospholipid lie significantly below it

The INFLUENCE OF THE CEREBRO SPINAL FLUID IN ACROMEGALY ON THE URINARY EXCRETION OF CHLORIDES By P Ellinger, Dorothy C Hare, and S Levy Simpson (Lister Institute and Royal Free Hospital) An acromegalic woman of 32 drank much more water than she excreted in her urine, and perspired freely Subcutaneous injection of her cerebro spinal fluid into rabbits increased their chloride excretion during water diuresis, indicating *the presence of pituitary antidiuretic hormone in the* C S F Its amount decreased after radiation of the pituitary region

CHRONIC NON LEUKÆMIC MYELOSIS By R A. Hickling (Charing Cross Hospital) Its features are enlargement of liver and spleen from myeloid metaplasia, normal sized lymph glands and the presence of some immature red and white cells in the blood without any great increase in white cells The author would include under this name adult cases also showing osteosclerosis The myeloid tissue often contains large numbers of giant cells Splenectomy often performed after a wrong diagnosis of splenic anæmia has been made, is frequently fatal Seven cases are described

The Fate of the Elements Removed from the Blood Stream during the TREATMENT OF POLYCYTHÆMIA BY ACETYL PHENYLHYDRAZINE By R A McCance and E M Widdowson (King's College Hospital) Detailed metabolic observations were made on one patient During rapid blood destruction increased excretion of urea creatinine, and undetermined nitrogen occurred Less than 0 5 per cent of the iron contained in the destroyed red cells was excreted, and only 30 per cent of their nitrogen, 5 per cent of their potassium, and 30 per cent of their copper were excreted

A QUANTITATIVE ESTIMATION OF PANCREATIC ISLET TISSUE By Robertson F Ogilvie (Edinburgh) The method is based on measurements of the area of the islets in representative sections of the pancreas, and the number and total weight of the islets in the whole pancreas are calculated One hundred "normal" pancreases were examined The infant pancreas is found to contain a relatively greater quantity of islet tissue than the adult

THE SECOND POSITIVE WAVE OF THE Q R S COMPLEX By A. Hope Gosse and T E Lowe The authors find it in lead III in 2 2 per cent of 2045 patients referred to a cardiologist It occurred as often in normal as in clinically abnormal hearts, and appears to have no diagnostic importance

PORPHYRINURIA IN PELLAGRA By W Beckh, P Ellinger and T D Spies (Lister Institute, and Lakeside Hospital, Cleveland) Alcoholic pellagrins, like endemic pellagrins excrete increased amounts of coproporphyrin in their urine, the porphyrin output is variable but bears a rough relation to the intensity of the skin lesions The significance of these findings is discussed

THE ORGANIC MERCURIAL DIURETICS IN THE TREATMENT OF CARDIAC ŒDEMA By William A. R Thomson (London Hospital) Observations were made on 66 patients Salyrgan, neptal, mersalyl and novurit, given intravenously, all produced average 24 hour urine volumes between 2670 and 3000 c cm. Intramuscular neptal was slightly less efficient (2190 c cm) Novurit suppositories gave an average diuresis of 2360 c cm Ammonium chloride, 60 to 90 grains daily for 2–3 days preceding the mercurial diuretic, almost always increased its effect Digitalis had no appreciable influence on the mercurial diuretic effect

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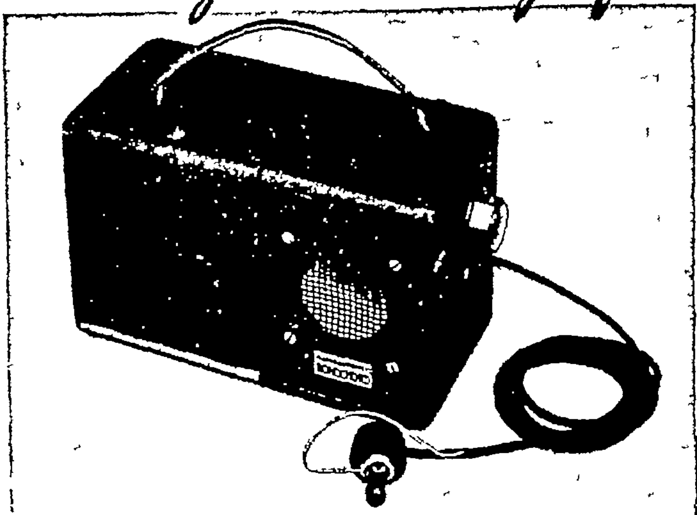

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[See also pp 24 & 25]

THE LANCET

LONDON SATURDAY AUGUST 7 1937

MILK

THE Government's policy for milk was announced last week[1] Its authors hope that it will provide for the dairying industry a basis for an increasing sale of milk in the liquid market will secure cheap milk for those classes of consumers to whom it will be of particular value, and will provide for consumers generally a permanent improvement in the cleanliness and purity of the milk supply The proposals include the creation of a permanent commission to keep watch on the production marketing and consumption of milk and to give general assistance to the industry and to the Ministers concerned The arrangement by which the industry receives Exchequer grants for milk used in manufacture is now to be modified by means of a price insurance plan intended to protect it from the effects of fluctuation in the price of imported butter and cheese Further administrative reforms relate to improved distribution. More important from the medical standpoint however is the group of proposals which concern 'quality milk The present bonus of 1*d* a gallon for accredited milk is borne by the pool funds of the Milk Marketing Board This 1*d* is now to be raised to 1¼*d*, of which the Exchequer will contribute ¾*d* for each of the first two years ½*d* for each of the third and fourth years and ¼*d* for the fifth year the balance each year to come from the pool Tuberculin tested milk is no longer to remain outside the Milk Marketing Board's scheme and a special premium is to be paid for such milk sold wholesale This premium will be 1*d* a gallon for the first two years (the Exchequer paying ½*d*) and not less than ¾*d* for the next three years (the Exchequer paying ¼*d*) The attested herd scheme of the Ministry of Agriculture is also encouraged by an increase of the bonus per gallon from 1*d* to 2*d* for each of the first two years and of not less than 1¾*d* in the third (Exchequer contributions 1½*d* and 1¼*d*) the rates for the fourth and fifth years will be determined later It will be noticed that the premiums are at a diminishing rate in order to give the necessary momentum to the production of quality milk in Great Britain In further explanation it is made clear that the producers of tuberculin tested milk will earn a premium of 2¼*d* a gallon for the first two years and 2*d* for the remaining three years while the producer of accredited milk with an attested herd will earn 3¼*d* a gallon for the first two years and 3*d* in the third year These are substantial bonuses and should do much to stimulate production of the cleaner types of milk.

It is the third group of proposals, however, that is of most direct concern to public health authorities and the medical profession For the Government announces its intention that any local authority shall be able to apply to the Minister of Health or the Secretary of State for Scotland for an order requiring efficient pasteurisation of milk retailed in its area The power to apply such an order is subject to the condition that it shall not come into operation within two years of its being made that milk from tuberculin tested herds and sterilised milk shall be exempt from its scope, and that milk retailed from dairies supplied by a single herd shall be exempt for three years (Obviously time must be granted for adjustment but these periods seem unnecessarily long) In the endeavour to direct more milk into the right channels the scheme for supplying it to school-children is to be continued with minor modifications and arrangements are to be made by which local authorities can obtain it at reduced prices for the use of expectant and nursing mothers and for children under school age This will enable such authorities to enlarge their present activities

The problem of milk has hitherto been dealt with piecemeal and by legislative measures of very limited utility It is refreshing therefore to find a balanced and progressive policy put forward We welcome especially the statement that increased consumption of liquid milk can only be based on public confidence in its cleanliness and purity This is an argument that we have constantly urged and it is satisfactory to see not only full recognition of its importance but plans that take it into account If advantage is taken of the powers now to be offered to local authorities this country will have gone far to put milk in its proper place as a food and once they are sure that it will not convey disease the medical profession will confidently recommend its wider consumption

HOLIDAYS WITH PAY

THE only statutory provision for holidays for those employed in industry is contained in the Factory and Workshop Act, 1901 This Act compels occupiers of factories or workshops to allow as holidays the equivalent of six working days (which may be allocated in half-days) to every woman child or young person employed by them The law does not enforce the payment of wages for such holiday periods The only change proposed in the present Factories Bill is the removal of the permission to split the holidays into half days The vast body of workers are without any legal entitlement to annual holidays with or without pay According to the evidence submitted last April to the Committee on Holidays with Pay[1] by Mr F W LEGGETT principal assistant secretary at the Ministry of Labour other holidays were allowed before the late war, in many industries but only small classes of employees and operatives were paid wages in respect either of statutory or additional holidays These exceptions included the railway, public utility, and local government (non trading) services After the war the practice spread, so that already in 1920 sixty general and district collective agreements between employers and workpeople were known to exist, a number which had risen to a hundred by 1922 In April last it was estimated that the number of workpeople covered by such agreements was between 1½ and 1¾ millions Under an agreement between the Engineering and Allied Employers' National Federation and the engineering trade unions, announced on July 27th, a further 600,000 workers will become entitled to a full week's holiday with pay for each year of employment This is the first instance in this country of paid holidays granted by a major productive industry and is, no doubt, one of the results of its prosperity In France, Belgium, and the Irish Free State workers, with certain exceptions, are statutorily entitled to this privilege, the relevant legislation in the case of each of these countries having been passed about a year ago In Belgium and the Irish Free State a continuous period of six working days is allowed after qualification by one year's employment, with a sliding scale of days for shorter service In France an employee is entitled to six working days for six months' continuous employment and to twelve working days for a year's service These holiday periods must, as a rule, be continuous and statutory public holidays may not be reckoned in allocating them

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[1] Milk Policy Cmd. 5533 H.M. Stationery Office 1937 d

[1] Minutes of Evidence taken before the Committee on Holidays with Pay First Day London H.M. Stationery Office. 1937 2s.

In his presidential address [2] to the annual conference of the Association of Approved Societies on July 2nd, Mr A. S Comyns Carr, K.C, suggested that this movement was of interest and importance to the approved societies In his view the unfavourable sickness experience that has been revealed in recent years by National Health Insurance records may be partly due to the stress, strain, and worry of modern life of every kind, and particularly of industrial life Holidays with pay would be some relief of this tension He would like to see unemployment benefit and holiday benefit closely linked together, and his proposition was that holidays with pay should be statutorily enforced and financed by a contributory insurance system He understood that the new law in France was defeating its own object by the burden it cast on employers and the consequent unemployment and rise in the cost of living Mr Comyns Carr urged the value of holidays not only as a means of restoring the worker but as a means of spreading employment more widely He sees them as a contribution towards changing the absurd situation by which most people work too hard while others are not allowed to work at all

Because improvement in diagnosis and record-keeping is only recent, it is hard to know whether there is among workers any real increase of mental breakdown or of physical disability with a nervous background The evil effects of rationalising industry and office organisation, with their attendant specialisation and speeding up, may have been counteracted to some extent by "routing"—control of the direction and flow of raw material. The result of the urge to output without humane control is brilliantly caricatured by Chaplin in his film "Modern Times" Obviously, a mere week's holiday is no remedy for such extreme forms of continuous over-pressure But it would do something to undo the staleness from which we all suffer as the result of doing the same thing constantly and so bring mental recuperation and raise individual efficiency The workers have, indeed, made their own arrangements in the past, often taking holidays without pay, sometimes financing them through clubs of their own organising It is also a conspicuous fact that they have learned to devote their spell of leave to less hilarious and unhealthy pursuits than of old The holiday with pay is inevitable, but in this country it is likely to come rather by agreements than by law, and probably not, in the first instance at least, by adherence to such conventions as the International Labour Office has already drafted on the subject

ALTERNATIVES TO PROSTATECTOMY

Suprapubic enucleation of the prostate is a good operation in the sense that it may give complete relief from symptoms and restoration to normal life Apart from its immediate dangers, however, there are two good reasons for considering other active but less drastic methods of dealing with prostatic enlargement In the first place, suprapubic prostatectomy, even under the most favourable conditions, means an unpleasant period of convalescence which is badly borne by patients whose heart or kidneys are already damaged, and in this it compares unfavourably with operations by the urethral route Secondly, if it is true that prostatic enlargement is not a new growth in the ordinary sense of the word, but is a response to hormonic imbalance, it seems reasonable to hope that in early cases injection of an appropriate hormone will cause regression and give permanent relief

In the July issue of the *British Journal of Surgery* Mr Hugh Lett reviews the three most popular alternatives to prostatectomy—namely, perurethral resection, treatment with hormones, and Steinach II vasectomy He concludes that suprapubic prostatectomy is still the operation of choice when the hypertrophy is moderate or large, but he thinks that perurethral resection will have a permanent place in prostatic surgery, its value being most apparent in the treatment of small middle lobe enlargements, of sclerosis at the bladder neck, and of obstruction following prostatectomy, and in certain cases of carcinoma of the prostate It can be used where a patient is too old or feeble to survive suprapubic enucleation, but in such patients Mr Lett holds that preliminary cystostomy should be performed, that the vasa should be ligatured, and that a number of limited resections should be done in preference to removal of a large amount of tissue at one sitting The recent development of the perurethral operation is due to the introduction of resection by the cutting current and though the results have been good in the hands of the expert there are many difficulties and dangers. Hæmorrhage was at first greatly feared but it has now been largely obviated and serious bleeding is rare. The careful coagulation of each vessel as it is exposed and the preliminary injection of adrenaline into the prostate gland are both helpful. Sepsis is now regarded as a much more serious complication and one that is much more difficult to avoid. Pus in the urine may be found for months after resection and urinary symptoms such as frequency and pain may persist indefinitely. The seat of the sepsis is the sloughing tissue left behind after the resection and the consequence all too often is chronic prostatitis, and possibly chronic vesiculitis. With limited resections there is less sloughing and the urine may become clear when the last slough has been passed. In feeble subjects preliminary vasectomy will prevent epididymitis. Another dangerous result of the operation may be excessive coagulation in the tissues deep to those to which the high frequency current is applied; rectovesical fistula peritonitis pelvic cellulitis and secondary hæmorrhage are all possible effects of excessive coagulation at the base of the bladder. Mr LETT also refers to the risk of passing an instrument too large for the calibre of the urethra. The present practice of surgeons in this country and on the Continent who employ this method seems to be to limit the proportion of cases treated by perurethral resection to about a quarter.

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[2] *National Insurance Gazette* July 15th 1937 p 433

A curious fact about the hormonal treatment of prostatic enlargement to which Mr LETT calls attention is that whereas castration has been used with success as a means of reducing the size of the prostate injection of testicular hormone is now one of the favourite methods of treatment. The resolution of this paradox no doubt lies in the separation of testicular secretions but meanwhile it is believed that symptomatic relief is sometimes obtainable with sufficient doses of extracts of whole testis. The use of testosterone propionate which has now been synthesised is being carefully explored with promising results. It is stated that the most hopeful cases for hormone treatment are the early ones and those in which the gland is large and adenomatous. About the value of indirect hormone therapy, as exemplified in the Steinach II operation Mr LETT is much more dubious. STEINACH'S original operation was vasoligation but he now advocates ligature of the vasa efferentia as they leave the testis. The purpose is to increase the production of the internal secretion of the testis and hence the amount of hormone in circulation. Theories have been produced to explain why this operation affects the prostate but as Mr LETT says until we are convinced that it really does anything we are not concerned with how it does it. He is prepared to allow that symptomatic relief is obtained in a small proportion of cases particularly in patients with large adenomatous prostates causing acute retention. But he is not sure that the effect is more than transitory and he thinks the procedure may be dangerous by delaying prostatectomy.

A HOSPITAL SURVEY

WHILE hospital accommodation in general is still insufficient throughout the country the internal migration of the population and the evidence of the approaching end of its growth are creating a curious situation in some localities. For instance, London with about two beds for infectious diseases per 1000 of the population is losing its people to the outer belt while the Home Counties have to make new provision in their areas for the incomers. Since the transfer of poor-law functions in 1930 the larger local authorities have felt the urge to enlarge the accommodation in municipal general hospitals. Some coördination of the total provision of beds both voluntary and rate-supported in each local government area has been assured by the consultation with voluntary hospital committees enforced by the 1929 Act. Although the terms of this section are vague and there is no obligation upon either local authorities or voluntary hospitals to reach agreement it may be assumed that the Minister of Health has rarely sanctioned large new projects of counties or municipalities without evidence from such a conference, or from some other source that there is need for the scheme. The erection of at least one new general hospital however has recently been sanctioned within ten miles of a hospital built by another authority so short a time ago that it is still unfinished and is moreover carrying the heavy expenses of administrative quarters big enough for double its present bed accommodation. Maladministration of this kind should be preventable. Adjustment of the preconceptions of voluntary bodies and local authorities may be reached through permanent coördinating committees like those set up in Manchester and other large towns but hospitals serve and should continue to serve wider areas than those even of the great cities. Little has been done to make collaboration over these wider areas effective. Not only are many local authorities non-coöperative but the voluntary hospitals are weakened by the lack of such a regional organisation as the Voluntary Hospitals Commission has recently recommended them to establish.

We may well inquire what has been the experience in other English-speaking countries and in this connexion a report just issued by the United Hospital Fund of New York[1] merits careful study. So far only the second volume has appeared Vol. I the summary and Vol III a financial survey being promised at an early date. The magnitude of the work may be gathered from the fact that the part available runs to 1246 pages the cost of the inquiry and publication has amounted to nearly £30 000. The committee entrusted with the work decided that the hospital problems of New York City with a population of seven millions could not be dissociated from those of the rest of the metropolitan area which spreads into three States New York New Jersey, and Connecticut. This whole area of 1535 square miles has a combined population of nearly eleven millions i e , rather more than live in London, Essex, Hertfordshire, Kent, Middlesex, and Surrey, of which the area is three times as extensive Serving the New York metropolitan area there are altogether 329 hospitals, of which 225 are described as general , 43 provide for diseases of the eye, ear, nose and throat, diseases of women and children and orthopædic conditions, with an aggregate total of 48,390 beds This total does not include beds for acute infectious diseases, tuberculosis and nervous and mental cases , for these 61 hospitals exist with 22,414 beds Seventy-three general hospitals, with 3395 beds, are described as proprietary, being comparable with a few of the larger private nursing-homes in this country There are striking differences from British practice in the provision for certain types of case For instance, rather less than 2400 beds are available for infectious diseases, a rate of 0 22 per 1000 as compared with standards varying from 1 to 2 per 1000 advocated here , the report suggests that this provision is adequate in the light of the present incidence and the existing facilities for home treatment On the other hand, 80 per cent of confinements occur in hospital, and while it is recommended that maternity beds be not increased because of the fall in the birth-rate, this degree of hospitalisation is accepted as likely to persist

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[1] Report of the Hospital Survey of New York Vol II The United Hospital Fund New York. 1937

The report covers a very wide field, dealing with the characteristics and past and present changes of the population , the nature and ownership of the hospitals , their nursing organisation and their out-patient departments , social service (almoner work) , ambulance provision , conditions of employment of non professional staffs , the needs of chronic cases and convalescents , the medical and nursing care of the sick in their homes , medical services organised by employers, unions, and friendly societies , coordination of all services for the sick , the special problems of maternity, mental disease, tuberculosis, venereal diseases, cancer, heart disease, diabetes, and dental decay The information furnished on each topic is precise and detailed The principal conclusions and recommendations occupy 22 pages, and touch upon almost every personal health service except the private practice of medicine The central point is the establishment in New York City and in each large subdivision throughout the area of a representative and authoritative planning group to review and "pass upon" every major proposal involving capital expenditure for the organised care of the sick A hospital council was, in fact, set up for New York in October, 1934 It is further recommended that, with the growth of population, voluntary and governmental hospitals should develop side by side, the latter being increased to accommodate the sick poor until their occupancy does not exceed 85 per cent of the available beds in them A standard of 4 5 beds in general hospitals per 1000 of the population is suggested , the present proportion falls little short of this standard At the same time dispensary and domiciliary care should be extended so as to relieve the pressure on in patient accommodation, these services as far as possible being centred on hospitals With the same object provision for chronic cases and convalescents should be made New construction of hospitals of less than 200 beds is deprecated Detailed proposals are also made for the conduct of the various institutions and services, and for meeting the needs of special types of disease

The report will be of lasting value to those concerned with the development of organised medicine and nursing not only in New York and the United States but in every civilised country

ANNOTATIONS

RADIATION AND THE CELL

THE treatment of tumours and other morbid conditions with X and gamma rays is now a well established part of medical practice As so often happens in the treatment of disease, the use of a powerful therapeutic agent has been developed by empirical methods of trial and error and has far outgrown any theoretical basis of experimental knowledge about biological effects Welcome therefore are the attempts made in the last 10 or 15 years to investigate the action of X and gamma rays on living tissues and cells of various kinds along scientific, as distinct from purely therapeutic, lines This type of research has had grave difficulties to encounter and the fact that a body of knowledge is gradually, if still somewhat uncertainly, emerging is of real importance to medical science A major contribution by Dr C M Scott has just appeared[1] His report is divided into two parts The first gives a reasoned account of available evidence in which the author collates the work of others with the results of his own first hand experience The second is a brief statement of Dr Scott's own experiments upon the exposure of the isolated frog s heart to X and gamma rays and of the eggs of the fly *Calliophora erythrocephala* to X rays under a well chosen set of conditions

The key to the report is given by the word quantitative, for it is now almost a commonplace observation that great advances may be expected in any investigation of biological processes and reactions once quantitative and enumerative methods come to be generally applied A second feature of Dr Scott's essay is a courageous though objective willingness to sum up the data and to state in definite terms the conclusions to which he has been led. No finality is claimed for any of these dicta , the author quotes Bayliss's remark that a clearly understood and intelligibly stated opinion promotes the progress of science even if it should in the end prove to be wrong On the physical aspect of the problem, often showing his awareness of possible errors in measurement, the author is definitely against the applicability of the quantum hit theory to explain the characteristic curves of the deaths of cells by irradiation The data are, he thinks, better explained by the theory of individual variation in the resistance of the cells—a conclusion well supported by his own work on the calliophora eggs He emphasises the amazing variability (more than 1000 fold) in sensitiveness to X and gamma rays of different types of cells and of the same tissues at different stages in their development from which the main fact emerges that embryonic tissues are radio-sensitive and adult tissues are relatively radio resistant In respect of the sensitiveness of cells that divide and the resistance of cells that do not divide X and gamma rays appear to have an action peculiar to themselves Basing his conclusions largely on the evidence obtained from the irradiation of the eggs of calliophora Dr Scott rejects the view that X and gamma rays have any significant effect upon the respiratory mechanism By a method of superimposing two types of injury (for example the injury produced by X rays on that produced by asphyxia) he was able to show their independence or their interrelation Out of this type of experiment he deduces *amongst other things* that the effect of X rays is completely unrelated to the *p*H of the eggs and that the temperature at the time of the irradiation or during the subsequent incubation has no influence on the lethal action of X rays He finds on the other hand that the lethal action of X rays on calliophora eggs is potentiated by chloroform ethyl ether and pentane Nitrous oxide however he says has no influence at all on the lethal action of the rays although it produces a delay in the time of hatching of the eggs He is further led to the view that the primary biological action is independent of the metabolic processes of the living cell and while insisting on the importance of cells that divide as distinct from cells that do not he comes to the conclusion that injury produced by radiation is primarily unrelated both to the rate of division and to the metabolic rate of living cells

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[1] Some Quantitative Aspects of the Biological Action of X and γ Rays By C M Scott. *Spec Rep Ser med Res Coun , Lond* No 223 H M Stat Office Pp 99 1s *6d*

Dr Scott concludes that the action of X and gamma rays is primarily on the nucleus itself and thereby on the cell processes that control growth. But, in spite of the good argument that X and gamma rays being powerful agents in the production of mutations are therefore acting directly on the nucleus, his fellow biologists will still remain doubtful whether the autonomy that he ascribes to the nucleus in the life of the cell is justified. Whether the effect is as Dr Scott concludes, on the nucleus itself or on the relation between the nucleus and the cell as a whole it remains clear that changes in cell division are the emerging phenomena that can be most readily studied There is also general agreement that these are the characteristic changes produced by X and gamma radiation The author quotes the results of workers who have used tissue cultures including the valuable work of the Strangeways Research Laboratory on the graded effects ranging from transitory reversible injuries to irreversible ones of various intensity In the most recent paper[*] from this laboratory K Tansley F G Spear and A Glücksmann describe the effect of gamma rays on cell division in the developing rat retina Here the in vivo radiation of the growing retina shows the distortion of the normal mitotic ratio between the frequency of occurrence of prophase metaphase and telophase. These authors also find that the undifferentiated cells of the retina may degenerate under the influence of quite small doses of gamma radiation owing to an effect upon cells which are about to divide but which are injured in such a way that they are unfitted for the ordeal of mitosis This distortion of the mitotic ratio is a very delicate tool in the analysis of what might be called cell division welfare The results show the reversible temporary effects and the irreversible degenerative effects in relation to each other and are in agreement with the results already obtained by the exposure in vitro of tissue cultures to gamma irradiation

On the influence of the time intensity factor on the biological result of radiations it may be well to quote Dr Scott s own words —

> 1 When the administration of a quantity of radiation is spread over a long time either by giving divided doses at intervals or by using a beam of low intensity the biological effect is less than the effect of the same total quantity of radiation administered within a short time
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> 2 As the time over which the administration of the radiation is shortened there comes a point beyond which the time intensity factor ceases to influence the biological result
>
> 3 The time intensity factor can be most simply explained in terms of the recovery process of cells and in the same terms the success of the modern methods of treating tumours can also be explained most simply

And in this connexion Dr Scott calls attention to the practical importance and value of future research on the processes by which cells recover from the effects of radiations

ILEITIS

A CLAIM to priority in the description of a clinical entity has sometimes been the most potent stimulus to an inquiry into its natural history The medical press has during the last two years devoted considerable space to the description clinical and pathological of non specific ileitis Many papers have been written each summarising its predecessors and almost all have referred to the early and striking contributions of Crohn and his collaborators Jackson[1] has now given a magnificent bibliography of 30 contributions Earlier work has come to light dating back to a clinical description in 1806[2] which has established a posthumous claim to priority on behalf of C Combe and W Saunders of London.

The nomenclature has been confused. Though this benign inflammatory disease usually limits itself to the terminal two feet of the ileum the same pathological process may affect any part of the small intestine including the large bowel. Ileitis cannot be described accurately as regional when some twelve feet of intestine are affected by the primary ulcerative and cicatricial process. Nor can Crohn s disease properly define the condition any longer since the majority of cases recorded have stopped short of the fistula-formation and gross changes originally described by him He has himself grouped together on the one hand types that present the picture of acute appendicitis and on the other those that *closely resemble chronic ulcerative colitis* Perhaps the most striking intermediate cases are those with gross pathological changes in the intestine—thickening ulceration and almost complete stenosis—whose unadorned clinical picture is one of mild dyspepsia Radiology has proved misleading as it has done in many cases of appendicular disease

Certain issues arise from the rediscovery of this serious enterological condition Perhaps the warning is mainly to the operating surgeon. Modern surgery already runs the risk of lay condemnation for its activity in the tonsillar and right iliac fossæ and it behoves every surgeon to keep in mind this benign but nevertheless progressive disease—non specific cicatrising ileitis—when an innocuous appendix vermiformis has been delivered through a neat but inadequate incision. The *radiologist* who seeks to diagnose appendicular disease should remain reticent, and the physician who feels a "thickened cæcum" in a dyspeptic patient should look upon this as a swelling in the right lower quadrant that may prove to be an organic cause of what he would otherwise label as functional dyspepsia. What the caustic surgeon frequently regards as a "physician's appendix" may prove to be, not a red herring, but matted ileum, and the old verdict of "just one or two glands in the mesentery" may come to be less often used. Jackson has done well to condemn the popular button-hole abdominal exploration.

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[*] *Brit J Ophthal* June 1937 p 373.

[1] Jackson A E *Surg. Gynec Obstet* 1937, p. 10

[2] Goldstein H I *Lancet*, June 1547

DELAYING THE ACTION OF VASOPRESSIN

THE pressor antidiuretic hormone of the pituitary has been known for many years, and it is disappointing that a principle so potent physiologically should have found so little employment in practical therapeutics. Apart from diabetes insipidus, which is fortunately rare, there are no conditions in which vasopressin may be said to be indispensable. These limitations are probably due, at least partly, to the brevity of the responses which injections of vasopressin elicit. This is particularly true of the pressor response, which, though intense, lasts only for minutes. The antidiuretic effect is more enduring and diabetes insipidus can often be held in check by injections or insufflations of pituitary extracts given twice daily. This compares favourably with the insulin treatment of diabetes mellitus, but even here there is room for improvement. Hence the attempts of Prof. Dodds and his colleagues, reported elsewhere in this issue, to delay the action of vasopressin by addition of zinc salts are of no small interest. The increase of the antidiuretic response which they have obtained in animals is very considerable, and if no unforeseen difficulties are encountered in applying these findings to clinical ends it seems probable that the treatment of diabetes insipidus may be improved, and at least possible that new uses may be found for vasopressin.

DIRECT IRRADIATION OF GLIOMAS

EXPERIENCE has shown that malignant gliomas cannot be eradicated surgically. Faced with a cerebral tumour such as a medulloblastoma or spongioblastoma multiforme, the surgeon usually limits himself to a palliative operation in order to preserve vision and relieve headaches. Such highly malignant tumours are usually remarkably radiosensitive, and dramatic recovery may follow energetic treatment with radium or deep X rays. This recovery however lasts for a disappointingly short time, and subsequent irradiations afford progressively less relief.

It is clear that the rays have a destructive effect upon the tumour, but the sensitiveness of the skin has always imposed strict limits upon this form of treatment. It is to overcome this serious handicap that irradiation through an opening in the skull has been adopted in certain clinics. The portion of the brain affected is exposed at operation, and after the surrounding tissues have been suitably draped and protected with lead foil, the X-ray apparatus is adjusted over the wound so that irradiation may be applied direct to the exposed brain and tumour, after which the wound is closed in the usual way. The "direct" method has been used by Sherwood Moore[1] elsewhere in the body, with hopeful results, and with Sachs and Furlow[2] he is now able to record some cases of brain tumour thus treated. Though no claims are made for the success of the treatment, it is emphasised that removal of intervening tissues allows of much larger doses being given than has previously been possible. Indeed, the limiting influence of the overlying skin having been abolished, there is danger that the radiation may be given in doses sufficiently great to destroy normal brain and even the skin, mucous membrane, and bone of the opposite side of the head. Since this method of treatment is as yet in the experimental stage, its intensive study is necessary before routine procedures can be adopted. An excellent example in this respect has been set by Elsberg, Davidoff, and Dyke,[3] who have erected in their operating theatre a powerful and heavily protected X-ray apparatus with mobile side screens for protection. A number of animals have been subjected to graduated doses of rays so as to determine the maximum exposure that the brain and spinal cord will tolerate. In animals in which this dose was exceeded neurological symptoms developed which were subsequently proved to be due to softening of the nervous tissue. In some of the animals ulceration of the mucous membrane of the pharynx and necrosis of the base of the skull resulted from the heaviest doses. Guided by these experiments, Elsberg, Davidoff, and Dyke have treated a number of patients suffering from inoperable brain tumours, but the time has not yet come when the results obtained with the new technique can usefully be summarised.

TRAFFIC IN DANGEROUS DRUGS

THE advisory committee of the League of Nations on the traffic in opium and other dangerous drugs, during its recent sessions at Geneva, concerned itself with many aspects of the international control of drugs of addiction. The figures furnished for the legitimate world manufacture of morphine, heroin, and cocaine show considerable reductions during the last seven years. Thus while in 1929 the amounts of morphine, heroin, and cocaine returned as having been manufactured were 57.85 tons, 3.65 tons, and 6.43 tons respectively, the corresponding figures for 1935 were 30.91 tons, 0.67 tons, and 3.97 tons. These last amounts are held to approximate to the world's legitimate needs of these drugs. Fifty-four sovereign States are now parties to the Geneva Convention of 1925 and 61 to the Limitation Convention of 1931. The position is less satisfactory as regards the 1936 convention for the suppression of illicit traffic, for while 32 States have attached their signatures to it no ratifications have yet been deposited.

The clandestine manufacture and illicit traffic in narcotics in the Far East is "increasingly serious, especially in the Chinese provinces under Japanese influence." According to the representative of the United States in these provinces "the systematic increase of poppy cultivation and of the sale of opium had, for the past year, attained alarming proportions." Some 40 to 50 tons of Iranian opium are stated to be annually imported into these provinces and Manchuria for the production of morphine and heroin which are then consigned to North America, Egypt, and Europe. It is alleged that in Jehol and Manchuria the administration encourage addiction as a source of revenue. Japanese newspapers have stated that in 1936 about 6000 persons died of drug addiction in the chief towns of Manchuria. The Manchukuo Government estimate an increase of 25 per cent. of the sales for this year over those for 1936, and apparently have no intention of arresting the traffic in heroin and morphine. The advisory committee have appealed to the Chinese and Japanese Governments to coöperate in the campaign against the manufacture of and illicit traffic in narcotic drugs Not much progress appears to have been made towards the conference on limitation of the production of raw opium which was authorised by the Council and Assembly of the League some years ago "The committee was unanimous in thinking that the final success of the conference could only be assured by painstaking and methodical preparatory work carried on without undue haste and accordingly resolved itself into a preparatory committee' of which a session will be held in May 1938

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[1] Moore, S.: *Amer. J. Roentgenol.* 1936, 36, 909.

[2] Sachs, E., Moore, S., and Furlow, L. T.: *Ann. Surg.* May, 1937, p. 659.

[3] Elsberg, C. A., Davidoff, L. M., and Dyke, C. D.: *Bull. Neurol. Inst. N.Y.* January, 1937, p. 19.

SWAHILI MEDICINE

A CORRESPONDENT Mr W Hichens late of the Civil Administration of East Africa has had the good fortune to come into possession of a specimen of medical literature which he believes to be the only medical writing of the Swahili people that has ever reached European hands He tells us that such writings have long been talked of as current among the native medical practitioners, but are always jealously guarded and handed down among the natives alone The manuscript which has come into his possession is written in the Swahili tongue and was dictated in or about 1885 by Maalim Sikujua to his son, Maalim Sikujua the younger and added to by the son and by another learned native Ahmad bin Muhammad bin Ahmad. The elder Maalim Sikujua was, we are told a man of considerable eminence who lived through the greater part of the nineteenth century, and owed his renown not only to his medical learning but also to his skill as a poet His son followed in his father's footsteps and was distinguished both as a poet and a doctor and Ahmad bin Muhammad (1810–80) was a sage learned in the law and of aristocratic descent a scion of the royal family which ruled the district round Mombasa for many centuries until the coming of the Europeans The people of this district are a dark-skinned race of mixed origin the original Bantu stock having been intermarried for many generations with Persians and Arabs In the 600 years between 1200 and 1800 this race attained a high degree of culture and refinement Their ports of Mombasa Malindi and later Zanzibar were the chief markets for the slave gold ivory and spice trade between the Farther East and Africa and their prosperity their learning and their culture generally they owed chiefly to the Persian and Arabian elements which entered the coast early in the tenth century of our era The medical lore and tradition of the Swahili people thus has a dual origin the native traditional practice was added to and no doubt largely supplanted by Arab learning and Persian experience and tradition and as we know Arab medicine was considerably indebted to Greek medicine Mr Hichens therefore considers that the manuscript of Maalim Sikujua represents the traditional medical learning current during the whole of this long period until the arrival of the Europeans in the nineteenth century moreover that this body of traditional lore still keeps a place side by side with European skill Many of the drugs recommended are closely akin to those which figure in the European pharmacopœias and though there are traces of medical magic and of remedies which owe their virtue mainly to the power of superstition still there is not a little that is of proved value Mr Hichens suggests the possibility that some of the native drugs which have hitherto been but little studied may prove to be useful additions to European pharmacology

Mr Hichens has translated the manuscript and added many footnotes dealing with the nature of the remedies and occasionally with the native herb lore and folk medicine which are full of interesting information The manuscript deals with a wide range of subjects among which are included leprosy elephantiasis syphilis sterility and impotence still birth dropsy and hæmorrhoids There are sections dealing with such common disorders as suppuration in the ear and constipation and there is a chapter on demon possession It is often difficult to recognise from the somewhat abbreviated descriptions the exact nature of the complaint for which the prescriptions were supplied. But in several instances Maalim Sikujua recommends incision for suppuration to be followed by hot fomentations of various native drugs Calumba root is a drug which he praises but adds that it is so common and well known a remedy that patients often despise it Human nature obviously does not change under another sky Purgatives of course figure largely indeed purgation is to be the preliminary to all drugging In every coughing ailment and congestion it is necessary to give a purgative first When you have given a purgative and know that his bowels are clean then is the time to give him medicine. The sections on leprosy and elephantiasis distinguish between the true and false diseases, but do not give any very clear indication of the nature of the distinction it would appear that the author wrote for instructed hearers and was so able to devote most of his space to the lists of approved remedies Mr Hichens has not given us any excerpt on the treatment of fevers: it would be interesting to learn if any of the Swahili remedies have any great reputation among the natives and what they are He does mention briefly in his introductory remarks as an instance of magic medicine the treatment of dengue by means of the stolen rope the rope *must* be stolen but he does not tell us how or where it is applied. A careful comparison of this Swahili treatise with some of the earlier Arab medical works should be of great interest

ABLATION OF TONSILS BY SHORT-WAVE DIATHERMY

IN two short papers[1] Frühwald and Stieböck describe ablation of the tonsils by means of short-wave diathermy coagulation respectively from the clinical and technical aspects. A current of 1¼ kilowatts is used delivering undamped vibrations of a frequency of about 50 millions per second, with a wave length of 4–8 metres The method is unipolar for a passive electrode is not employed. The electrode carried by a pistol-shaped handle provided with a switch, is held at a distance of a few millimetres from the surface of the tonsil and the current switched on for a few seconds until a greyish white area is produced The tonsils are treated at alternate weekly sittings the entire process occupying several weeks Frühwald and Stieböck claim that the current is more even and more easily regulated than that of the ordinary diathermy coagulation with a wave length of 300 metres and that after two or three applications of 20 per cent cocaine the patient feels only a slight pricking or burning sensation but there seems to be a similar after soreness for the diet is restricted to slops for a couple of days after treatment. Nearly 200 cases have been treated by this method which has been highly satisfactory in the authors' hands. Quite rightly they do not recommend it in place of surgical enucleation but reserve it for patients for whom this is undesirable. They rather spoil their case, however, by ascribing to the ordinary diathermy defects that are not unavoidable, such as uneven sparking, a clattering noise from the machine, and unpleasant sensations, and even burning, at the site of the indifferent electrode. Diathermy has a well established place in the treatment of unhealthy tonsils, and the use of a short wave machine has possible advantages that deserve trial.

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[1] Frühwald V., and Stieböck, L. H., *Wien. klin. Wschr* July 9th 1937 pp 1038 and 1039

A MALEVOLENT SEA-ANEMONE

IN England seaside bathers run more risks from broken bottles than from sea anemones or even their cousins the jelly fish. A sharp sting from one of the latter may, however, occasionally remind us that this family is supplied with a system of "thread cells," each of which contains what is in effect a poisoned harpoon with a spring release. On less friendly coasts sea anemones are the cause of a good deal of minor discomfort and of some more serious lesions, the natives who dive for sponges being especial sufferers, and it seems that one particular type, the "hellenopolyp," has acquired an evil reputation on the coast of Greece. The lesions produced by this hellenopolyp were described not long ago to the Academy of Medicine in Paris.[1] The immediate result of a sting is local erythema and a crop of vesicles, with a sharp sensation of burning and itching, sometimes accompanied by a rigor and rarely by nausea and vomiting. The burning and itching last only a few hours and the lesions always disappear without treatment in three or four days. Experimentally it was found that touching a rabbit's conjunctiva with the tentacles of the hellenopolyp produces severe inflammation within a few seconds, but that this clears up, as long as there is no secondary infection, in about a week. Typical lesions were produced on volunteer students by stroking their skin with the tentacles, and here again the erythema appeared extraordinarily rapidly, its severity depending largely upon the size of the sea anemone used. Macerated sea anemone had no effect when rubbed into unbroken skin or when applied to a small incision, and it is thus clear that the toxin injected by the harpoons of the thread cells is the cause of the skin reaction. Various local applications—ammonia, hydrogen peroxide, spirit, olive oil, and vinegar—were tried on experimental lesions with a view to lessening the local discomfort, and of these vinegar was found to be much the most successful. Probably it is also the soundest first aid application for stings from jelly fish.

ANTERIOR PITUITARY THERAPY IN CHILDREN

BELIEVING that many clinicians are still unduly sceptical about the value of anterior pituitary therapy, Jacobsen and Cramer[2] record their results with ten children, six girls and four boys, treated for dwarfism, infantilism, hypogonadism, and certain types of obesity. Dry thyroid, given in conjunction with anterior pituitary extract, was found to bring more rapid improvement than either anterior pituitary or thyroid given separately. Careful investigations, including blood and blood chemistry examinations where indicated, basal metabolism determinations, radiography of bones and other special examinations as seemed necessary, were carried out in each case. Attempts were made to compare the effects of periods of treatment with control periods when no treatment was given. Use of more than one endocrine extract was avoided as far as possible, except where there was obvious deficiency of both pituitary and thyroid, in which cases, after making certain of the potency of the preparations and observing the effect of each singly, both were given. In all ten cases the results of treatment were held to be strikingly successful. A boy, aged 11, with hypopituitarism was treated for six months twice weekly with 1 c cm injections of an anterior pituitary extract (Antuitrin). No thyroid was given, nor was the diet curtailed. During the period of treatment he gained 1½ inches in height, lost 26 pounds in weight, and became more masculine in manner. Seen three years after stopping treatment he was still quite normal. A girl of 13, who had grown slowly since the age of 7 and who was not maturing normally, was observed for seven months without treatment. During this time her height did not increase. She was given, daily for seven months, 6 grains of anterior pituitary by mouth, during which *time she grew 2 inches. For a further nine months* she was given 2 grains of thyroid daily in addition to the pituitary. She was now 15½ and during the next four months was given 25 injections of anterior pituitary. Menstruation not having started, extract of pregnancy urine was then added. Two weeks later she began to menstruate and has continued in normal rhythm ever since. During the two years under treatment she grew 5 inches and the secondary sex characteristics developed normally. Equally satisfactory was the mental and emotional response to treatment. Thus an inhibited boy became a class leader and a bookish girl became interested in outdoor sports. Whilst making due allowance for parental optimism, the writers are sure that, with the physical approach to normal in these cases, a very real change in mental outlook and behaviour follows.

THE LANCET 100 YEARS AGO

August 5th, 1837, *p* 699

DEATH BY FALLING FROM THE CLOUDS

THE following is an account of the post mortem examination of the body of Mr Robert Cocking, aged sixty-one, who fell with a suicidal machine called a *parachute*, from the cord of a balloon which ascended from Vauxhall Gardens on the 24th of July, 1837. The height which the balloon had reached when the parachute commenced its descent, is stated to have been 5000 feet. The instrument of death was simply a canvas toy, constructed in ignorance, and used with the hardihood which might distinguish an unfortunate being who contemplated his own destruction by extraordinary and wonder-exciting means,—an end which, without the motive, was more effectually attained, by the crushing of the parachute in the air as it dropped.— (*The report of the post mortem findings is then given showing multiple fractures of the ribs, clavicle, vertebræ and of the pelvis, and the account continues as follows.*)

Mr Finch and the other surgeons at the inquest, agreed in opinion as to the cause of the deceased's death, namely, the injuries he received in the concussion by the fall on the earth. The spinal marrow was likewise very greatly damaged. Mr Finch also was of opinion, from the nature of some of the injuries, that the deceased had fallen on his feet.

The Jury returned a verdict to this effect:—"We find that the deceased, Robert Cocking, came to his death casually and by misfortune, in consequence of severe injuries received by a fall out of a parachute of his own invention and contrivance which had been appended to a balloon; and we further find that the parachute did move to his death; and therefore that such parachute ought to become a deodand, and forfeited to the Queen."

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[1] *Bull Acad Méd Paris* 1937 117 203

[2] Jacobsen A W and Cramer A J *J Amer med Ass* July 10th 1937 p 101

SPECIAL ARTICLES

PSYCHOTHERAPY IN THE OBSERVATION WARD*

By C M Barker B Chir Camb

OBSERVATION wards are wards attached to public hospitals—i e those supported by the rates—where people are sent whose mental condition is thought to be doubtful. Such persons are usually detained as patients only for a definitely limited period, about two weeks and are then discharged or transferred to a mental hospital.

Up to a few years ago and indeed still in many parts of England and even a few districts of London the observation wards were merely clearing houses attached to poor law hospitals. They were without trained personnel or proper facilities for observation and treatment A general practitioner was called in to see the patients and they were either deemed insane and sent to a mental hospital or were considered sane enough to be discharged.

In those days each board of guardians in London had its observation ward attached to the local infirmary Since the London County Council has taken over the poor law hospitals in their area the observation wards have been centralised the smaller ones being closed down and absorbed by larger units Each of these units serves a large section of the metropolitan area. For example, the City of London Institution Bow road receives patients from an area extending from Hampstead and Highgate in the north to the River Thames in the south and includes the City of London The patients are of various types and circumstances and come from all classes of the community although of course the poorer classes predominate.

A large number are admitted via the police, with a history of say

> Found wandering and is mentally confused and lost
>
> Attempted to jump off London Bridge
>
> Walked into police station and complained that the neighbours were reading her thoughts with a television machine
>
> Came up to policeman in Threadneedle-street and said he did not know who he was what he was where he came from or where he was going
>
> Arrived at Liverpool-street Station without a ticket; when asked for one replied that for him a ticket was unnecessary as his soul-mate paid for him

The members of another large group come directly from their homes their private doctor having obtained an admission order from the public assistance officer or a relative or neighbour may have notified the public assistance officer who himself ordered the patient into the observation ward. Still another group will have come from the general hospitals—a large voluntary hospital or a London County Council general hospital. The accompanying letter may say

The patient has become mentally confused and difficult to manage

The mental illness is of every kind and degree—from a mild neurotic state to an acute mania, from the earliest onset of a mild mental disturbance or emotional upset (e g. a highly strung person over whelmed for the time being by difficult circumstances) to well established insanity

It had always seemed to me that the observation wards instead of being used merely for preliminary diagnosis and as clearing houses prior to disposal, might become centres for psychotherapy and indirectly educational centres for the general public in matters of mental health. Five years experience (1929–35) as a medical officer in observation wards which dealt with about 600 cases a year confirmed me in the belief that this was not an idle phantasy but something which could be translated into actual practice Even though special circumstances limit the amount that can be accomplished, it is nevertheless necessary to have these aims clearly defined if the observation ward is to develop along the lines indicated by its unique position in the mental health service of the community

It is not my purpose to describe the workings of an observation ward but to sketch briefly some of the opportunities I found there for psychotherapy

THE ARRIVAL

We will commence with the arrival of the patient Here at the beginning is a situation which often requires considerable psychological judgment Not infrequently an otherwise quiet patient becomes resistive and violent at the moment of entry and we find that the relatives have thought it necessary to deceive him as to his destination so that he would accompany them quietly He arrives not as he expected at the convalescent home, the post office or (as in one case) the night-club, but at a place which savours suspiciously of the unknown and confirms his idea that his relatives are trying to put him away Or the newly admitted patient may protest I am not mad; all *these* people are mad, and this may be true.

It is surprising how often in these difficult situations the alarm or distress of the patient can be allayed by the medical officer establishing an appropriate relationship with him so that he feels that he need no longer meet these terrors alone, but in fact has the person in authority standing with him He feels accepted and that sense of isolation which is so often a part of the burden of the patient is relieved

This is the critical time in relation to the family as well The relatives often arrive at the hospital in a state of greater agitation than the patient Upon more than one occasion on the arrival of the family party at the hospital door I have mistaken another member of the family for the patient

It is essential to secure the family's coöperation from the start. A relative offended inadvertently on the doorstep may refuse to coöperate and later may even actively interfere with the treatment, his negative or even hostile attitude being conveyed to the patient It is important to remember that usually this is the first time they have been in a mental ward and know nothing of its procedure. Added to this they may be exhausted and irritable from days weeks or even months of a heroic struggle to keep the son wife or daughter from being sent away to the mad house there as they believe to be put away for the rest of his life.

This is no exaggeration Their idea of a mental hospital is usually that of a lunatic asylum such as existed a hundred years ago Their imagination has been fed by lurid tales handed down from grand parents and parents, and kept alive by an occasional lurid story in the sensational press The terrified exclamation If I let my boy go to the mad house they will keep him there for life is not an uncommon one "I know I am signing his death warrant, but I have done all I can to keep him at home," said one mother when signing the application form for admission of her son to a mental hospital

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* Based on a paper read before the Analytical Psychology Club

These generations old, and at one time only too well founded, prejudices are very difficult to eradicate But to my mind it is of extreme importance to correct such ideas both in the minds of patients and relatives, and through them the general public It takes time when one feels it can ill be spared and patience which seems unnatural unless one appreciates the reasons for the hostility and stubbornness

They need to learn that mental illness is an illness just as much as scarlet fever or tuberculosis, that each requires treatment away from home in a special hospital, that each requires that it be "certified" (that terrible word) that the patient is suffering from the illness which the special hospital treats, and above all, that in each the aim of the hospital is to get the patient well in the shortest possible space of time and so send him home and make room for one more on their long waiting list

PSYCHOTHERAPY FOR THE RELATIVES

Every patient is to some degree identified with the members of his immediate family and they with him For practical purposes therefore I learned to look upon the family as extensions of the patient and take the time to listen to their problems and talk with them about them This one does of course not only at the time the patient is admitted but also as necessary from time to time throughout the treatment Often personal problems which directly influence the patient's illness come to light and are dealt with Sometimes indeed, though the patient himself is at the time too deeply engulfed by the illness to be accessible to psychotherapy, one finds a relative who is on the edge of a nervous breakdown and in urgent need of treatment In such a case I think it lies within the province of the medical officer to give what help he can, or is able to find time for, according to the urgency, even though the relative is not officially a patient

Occasionally a relative would ask for permission to attend as an out-patient, or an out-patient would bring a relative in for consultation Sometimes it seemed advisable to keep in touch with an entire family One such case is that of Mrs W B whose husband was once a patient and who later had disappeared from home and had not been heard of since There were two bright boys five and eight years old The psychiatric social worker kept in touch with the family and both the wife and children were seen by me occasionally Our object was to lessen the feeling of insecurity and incompleteness which threatened at one time seriously to involve the whole family, because of the suspense and uncertainty about the father

I referred above to the necessity for securing the relatives' coöperation in treating the patient Often the lack of it is due to ignorance. Sometimes changing the attitude of the family towards the patient and his illness is a more difficult problem of education than that of the patient himself In the case of R T, a young man in a state of almost complete dissociation, the parents alternately wept over him and urged him to "pull himself together," while a brother who was a policeman gave more drastic advice, even threatening to "beat sense into" him It is easy to imagine the difficult time this patient must have had on his return from the mental hospital.

At the other extreme we find the insight and coöperation of the husband of Mrs S P whose history I will recount later He himself was on the verge of a nervous breakdown and suffered intensely from his wife's behaviour during her illness However he worked with me on his problems concurrently with his wife's treatment and thus was able to wait more or less patiently for the favourable development which ultimately took place in her

The handling of the relatives often requires as much psychological insight and skill as the treatment of the patient One of my early failures in this connexion was with the husband of Mrs E T The patient recovered sufficiently to be discharged after a few days but her condition demanded intensive psychotherapy over many months Insufficient contact had been established with her husband during the acute stage of her illness when he was thoroughly alarmed about her condition After she returned home he became antagonistic to the idea of further treatment For a time this interfered seriously with her progress, but fortunately I was able later to gain his coöperation, and with this there was an immediate improvement in the patient

There is no need for me to emphasise further the importance of including the family in one's consideration of the patient But before I leave them altogether I must say that always at the back of my mind there was the thought that it is through relatives and others associated with the patient that erroneous ideas concerning mental hospitals can be corrected, and that perhaps in time a new attitude will spread to the general public and that they will have some appreciation of the hospital facilities available, and the value of early recognition and treatment of mental illness

SOCIAL BACKGROUND AND AFTER CARE

Now to get back to the patient It was customary for the psychiatric social worker to visit his home and place of work and obtain a complete social history Such a history is quite invaluable, for it gives the medical officer the background for his picture of the case His task is to bring together all the relevant data from the social worker, from the story told by the relatives, from the patient's own account, from his and the nurses' observation of the patient, and from his interpretation of the dream and phantasy material disclosed to him by the patient He must then decide what is the best line of procedure in this particular case—whether the patient should be sent to a mental hospital or to a general ward, or be discharged home, and if he is to go home whether he should have intensive psychotherapy as an out patient

Approximately half the cases which come into an observation ward are transferred for treatment to mental hospitals Of the remainder a small number go to general wards, but the majority are discharged in care of their relatives

After he leaves the observation ward or the mental hospital the patient still has to face the problem which caused his admission, and the important task is to prevent a relapse by helping him to deal with the factors that precipitated his breakdown. As is well known, a nervous breakdown is not entirely a negative happening It is a great revealer of the extent of the distortion of the individual from his natural pattern, and it is a great opportunity as it gives him an incentive to correct that distortion, and to develop a way of life more in harmony with his distinctive nature With this in mind it was my practice to ask each patient at the time of discharge to let me know from time to time how he was getting on, and I invited him to write or telephone for an appointment and come in to see me if he thought I could be of help to him. If he seemed suitable for intensive psychotherapy he came up regularly for treatment as often as his case demanded (or as often as my time would allow), but in most cases what one might call psychological supervision was all that was possible or advisable.

An example of such a case is that of Mrs S. P., whose husband I referred to above. She was a middle-aged woman admitted from a general hospital with amnesia. She had been married ten days before her attack, and although she quickly regained her memory she had no desire to go back to her husband. However she was finally discharged to his care and advised to come up as an out-patient. A good relationship had been established with the husband, and he wrote for an appointment whenever the situation became too difficult for him. As they lived some distance from London their visits were infrequent but extending over a period of a year and a half.

For many months there was little progress. Indeed at times there was danger of both being engulfed in the mutual situation. The husband was himself near breaking point and required as much psychotherapy as the wife. After some time the wife disclosed tragic experiences in her childhood and adolescence which had led to a previous attack of mental illness. Apparently her recent marriage had released the repressed fear connected with these earlier experiences and a large part of her was frozen.

Her fundamental improvement started about this time, nearly a year after the beginning of treatment. She began to make a garden and to redecorate their house; her sexual relation to her husband became satisfactory and she wished to have a child. A few months later the husband wrote that she was completely well and that they were very happy.

Another case may be cited where intensive psychotherapy was used over a considerable period of time.

Miss M. A., a Jewish girl of 20, was admitted from a general hospital where she had been taken after collapsing in the street. She had symptoms of choking, difficulty in swallowing, involuntary jerking movements, and anaesthesia over one shoulder. Her mother said that she had had much treatment at various hospitals and clinics for nervous illness. She would improve in hospital but regress as soon as she came home. Her hysterical symptoms cleared up in a few days and she was discharged home but advised to attend as an out-patient.

She looked and acted like a spoiled child and converted every emotional difficulty into a physical symptom. She was unable to keep work longer than a few days and her life was punctuated by hysterical outbursts. She had been attending for six months before any definite positive movement took place in her. Then she had a dream of an old school teacher, a woman she had admired but behaved badly towards. She was encouraged to look her up. Eleven years had elapsed and it was a great effort to trace her and a greater one to meet her. However she did it. This made a nucleus of positive achievement and from this time her progress, though slow and irregular, continued. She obtained work in the office of a large firm and there her responsibilities were steadily increased and her salary raised. She became keenly interested in her work. At the same time her childish clinging to family relationship was replaced by independent friendships in the outside world with their attendant responsibilities. The course of a love affair or two failed to run smoothly, but she faced up to the difficulties in adult fashion.

For a long time she had recurrent hysterical symptoms, but she learned to recognise them quickly as such, to search for their source, and to work at the problems involved. The change in her physical appearance was as marked as the change in her behaviour; the expression of petulant childish restiveness gradually giving place to one which was mature and attractive.

When a patient went on to a mental hospital I invited the family at the time of transfer to bring him in to see me when he was discharged. Several such patients came up at regular intervals or at such times as they felt the menace of their problems once again.

Miss K. Y., aged 20, is an example. She was admitted in an acutely dissociated state, quite inaccessible to psychological treatment, and later had to be forcibly fed; for a time even her life was in danger. She recovered in the mental hospital within a few months and was discharged home. During a long period of regular attendance as an out-patient she learned to develop those sides of herself the immaturity of which had been responsible for her breakdown. Her work in a factory was the same mechanical job she had done for over ten years. This was far too meagre an outlet for a person of her capacity and she had necessarily to look elsewhere for intellectual and emotional satisfaction. By belonging to evening classes and joining in the social activity growing out of these she gradually developed a personal environment with which she could interact. Her dreams and phantasies were analysed with her as much as seemed advisable, and it is evident that she gradually became a stable integrated person.

It is obvious that it is advantageous to lay the foundation for such prophylactic after-care as early as possible. As I have already indicated, every effort must be made to establish a good relationship with the patient and his family while he is still in the observation ward, so that he will be willing to come back later if necessary.

One reason for keeping in touch with these patients myself was that the provision for after-care in London was then inadequate. Furthermore I believe that a patient does better when he continues to work with the psychologist who made the initial contact with him and who already knows him and his home and work environment. Another reason why it seems advisable for such patients to continue to work with the officer attached to the observation ward rather than be referred to an independent psychological clinic is that these clinics often have long waiting lists and the patient may have to wait for months before he can obtain the help he needs.

HOW FAR IS PSYCHOTHERAPY WORTH WHILE?

Mental hospitals are usually unable to treat the patient psychologically owing to the enormous numbers of patients in proportion to medical officers. Psychiatrists in mental hospitals realise only too well that they have many patients who would benefit by intensive psychotherapy but for which there is usually no time available.

Whether it is financially profitable to the State to give to individual patients the many hours necessary for psychotherapy is sometimes questioned. In my opinion the point at which economy should be practised is in the initial selection of cases. This selection requires much care. One must take into consideration the patient's past history evaluated in relation to his environment; the actual load, often much greater than the apparent load, under which he has broken down; *his intelligence*; and what for want of a better term I call "moral fibre." Intuition based on knowledge gained from previous experience also plays its part.

Although the number suited for deep therapy is small, my experience indicates that these individuals are often highly valuable psychologically and are well worth the time and effort expended in helping them to develop sufficient maturity so that they themselves can deal satisfactorily with their life's problems.

I am indebted to Sir F[illegible] [illegible]nzies, county medical officer of heal[illegible] [illegible] to p[illegible] this paper My warmest thanks are due to the psychiatric social workers without whose help the work would not have been possible The psychotherapeutic methods used were those of the Zürich (or Jungian) school of analytical psychology

AMERICAN MEDICINE

THE OPINIONS OF PRACTITIONERS

THE provision of medical care in the United States is a subject on which much has been written during the past five years, and it might seem that it had now been worn threadbare But this is not so "On all great subjects," wrote J S Mill, "much remains to be said", and the truth of this saying is illustrated in two large volumes lately issued by the American Foundation.[1]

The book records the results of an inquiry made by the special technique that the Foundation has used in previous inquiries The procedure is to present to "the competent groups" a general indication of the problems under consideration, and then "to define the problems comprehensively by assembling all the factors brought forward in the free discussion that follows" In this instance the competent group was the medical profession, and the two volumes consist almost entirely of extracts from some 5000 letters received from about 2100 doctors, selected to represent all branches of practice and all parts of the country The doctors first selected had all been in practice for at least twenty years, and to each a letter of inquiry to the following effect was sent —

> Has your experience led you to believe that a radical reorganisation of medical care in this country is indicated? If so, in what direction? If you do not believe that radical reorganisation is indicated, what, if any, changes or revisions in the present system would you like to see made? What evolutionary possibilities would you stress?

A similar letter was sent to a number of doctors—selected with the coöperation of the deans of 67 medical schools—who had been qualified within the past five years, and another to a small group of doctors who had practised for less than twenty but more than five years Though the replies are anonymous, the names and professional positions of the contributors are given in an appendix The laborious task of examining, classifying, and setting out the replies has been performed with remarkable skill by Miss Esther E Lape, and the result is a book that is unique In thousands of quotations from doctors' letters, many of which are written with a vigour and piquancy of phrase that cannot fail to rouse even the most jaded reader, these two large volumes present, it is claimed, a picture of the whole structure of American medicine—including, as one doctor puts it, "the back of the house as well as the front"

Though the replies show wide divergencies of opinion on most subjects, on some there is a large measure of agreement It is generally agreed that for many people medical care is not available because of its high cost But though it costs more it gives more One contributor points out that while it is true that a man pays more for medical care than his grandfather did,

> grandfather paid the doctor one dollar per call for feeling the pulse and looking at the tongue and leaving a little calomel, and that type of service was worth one dollar and no more"

The increased cost is attributed chiefly to increased specialism, the use of laboratory procedures, and, what is much more important, increased hospitalisation A professor of medicine in a middle western university writes —

> "My income is much larger than that of the average man, and I don't have to pay doctors' bills, but last year, when my boy was in hospitals for several months with a bad streptococcic infection and had to have a series of operations, the bills for hospital care and nursing alone were large enough to send me digging deeply into my savings"

The point upon which the replies most nearly approach unanimity is that the responsibility for providing medical care for the indigent should be assumed by the public authorities as a charge upon public funds At present such treatment as the indigent receive in America is given chiefly as private charity by the practitioners concerned, and the practical effect of this is generally felt in the profession to be an inequitable thrusting of public responsibilities upon private individuals On the question of providing medical care for persons who, though not indigent, are unable to make sufficient provision for their own resources there are wide differences of opinion Some contributors are in favour of a State service of salaried doctors, and the current of opinion towards this view seems to be gaining strength Others foresee a solution in the adoption of some system of compulsory health insurance, and others in a development of the movement towards voluntary insurance, particularly insurance for hospital care, which has made substantial progress in America during the past few years Many contributors are, however, against any extension of State provision except for the indigent, and regard compulsory health insurance and a salaried medical service as almost equally objectionable The provision of free dispensary and hospital treatment, which has been stimulated by the economic depression, is said by some contributors to be much abused by persons well able to pay for medical care A urologist writes —

> "I recently plucked a patient from a charity service who paid me a fee of two hundred dollars He had passed safely through a so called social service"

An important body of contributors holds that the most urgent problem is not how to make a more equal distribution of the quantity of practitioner and hospital services now existing in the country, but to improve the quality of the services The feeling of these contributors is "that no system, old or new, will work until there is greater competence" This leads to a discussion of the problems of medical education Some contributors contend that a medical qualification should be for a limited period and renewed only after a course of post graduate study This is urged by a member of the National Board of Medical Examiners, who states that the average doctor

> "ceases to learn when he is licensed to practise He is not a student, does not take kindly or intelligently to medical advances and derives most of his inspiration from the pharmaceutical detail men, who make good livings largely from his ignorance"

In a considerable number of replies stress is laid on the need for higher ethical standards of practice Fee splitting is said to be widely prevalent A con sulting surgeon refers to the (apparently typical) country doctor of his area who

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[1] American Medicine Expert Testimony out of Court New York The American Foundation 1937 Two vols pp 1435 $3 50 A preliminary note on this book from a correspondent in the United States appeared in *The Lancet* of April 10th

> "brings his case to this hospital centre where he sometimes has previously made arrangements with some surgeon who pays him as high as 60 per cent of the fee. At other times he parks his case in a hotel and proceeds to sell to the highest bidder who is sometimes the surgeon with the least practice and least experience. In other words the patient is put on the auction block."

Many replies deplore the increase of specialism and particularly the multiplication of the ill-equipped and incompetent specialist. There are some very frank remarks about unnecessary operations. One pathologist writes:—

> "I put in three mornings a week as pathologist to one of our large hospitals and I have a large collection of appendices, uteri and other organs, which have been removed if sincerely then unconsciously for revenue only."

It is stated that a hospital board recently learnt that in 28 of 35 appendectomies performed over a comparatively brief period by the chief surgeon, the appendix removed was normal.

The replies of the doctors taking part in this inquiry are, as will be seen from the specimens quoted above, remarkably outspoken, and those who know something of the brilliant achievements of American medicine and have had the privilege of meeting American doctors in their own country may think that in the replies too much attention has perhaps been paid to "the back of the house" and too little to the front. But the general impression seems to be that it was well worth while to secure a frank and full discussion of so important a subject, even though it may have involved the risk (as a dean of a medical school puts it) "of exposing the family wash to the public gaze and some loss of prestige on the part of the medical profession." Those who are fortunate enough to read this instructive and entertaining report will probably agree with its editor that "Whatever part of the family wash is exposed to the public gaze through the medium of this report will, we think, not involve any 'loss of prestige' on the part of the medical profession. The wash on this line spread along in the pages that follow will be viewed sympathetically by those interested in developing a coöperative approach to the problem of making more of our citizens able to employ the resources of modern medical science for sickness and for health."

MEDICINE AND THE LAW

Rating of a Hospital

IN July, 1935, the Sussex Eye Hospital removed from its old and inadequate quarters in Queen's road, Brighton, to a new building in Eastern road. The change meant, as was expected, an increase in the assessment for rates. The governors, however, were by no means prepared for the decision of the rating authority that the assessment should be at £1125 gross and £934 rateable. Negotiations resulted in the figures being reduced to £840 and £607 respectively, but in the opinion of the governors these figures were still too high and they decided to take the case to quarter sessions by way of appeal. These proceedings took place on July 20th, and the governors lost the day. The appeal was based on three grounds: that as a matter of law the hospital, being a voluntary institution, was not rateable; that neither the governors nor any other person had paid rent or could pay it; and that the assessment was excessive and unfair. Evidence for the appellants showed that the capital cost of the building had not yet been raised, that it was impossible to meet this rate demand, and that had the governors been aware of the rateable figure the scheme of removal from the old buildings and the erection of a new hospital might not have been proceeded with. Expert evidence by valuers raised the question of the methods adopted in arriving at the assessment. For the appellants a valuation per bed was considered the correct way of assessing hospitals; for the respondents the contractor's theory method was adopted. It was in favour of the latter that the learned recorder, Mr. J. D. Cassels, dismissed the appeal. In his judgment Mr. Cassels said he held that the hospital must be treated like any other charitable institution—namely, that it was rateable just like any other property that happened to be in occupation. The contention that the hospital was not rateable because no tenant could be found for it, and that therefore there was no beneficial occupation, could not stand. Hospitals did necessarily present very serious difficulties to the rating authorities, but it was a little too much to submit that they were not rateable in general or that this particular hospital was not rateable. The recorder added that he had heard with satisfaction that while the hospital must make its contribution towards the expenditure involved in the maintenance of the borough there was power in the local authority to ease the situation so far as they were concerned, and he had been informed that the rating authority would treat the hospital with generosity so far as they could do so consistently with their duty to the rest of the ratepayers and not ask for costs. That was a very correct attitude and he dismissed the appeal without any order as to costs.

Parent's Refusal to Let Child Wear Glasses

At Portsmouth quarter sessions last week a jury refrained from insisting that a parent should give his child the full advantage of medical resources. William Avery, a clerk, was charged under Section 1 of the Children and Young Persons Act with neglecting his son Peter in a manner likely to cause injury to health. The Act defines such neglect as including failure to provide medical aid or, where the parent has been unable otherwise to provide medical aid, failure to take steps to procure it to be provided under the statutes relating to public assistance. It also defines injury to health as including injury to or loss of sight. The boy had been examined at school by the medical officer who found his sight to be defective. The medical evidence was that the defect of vision could be remedied by spectacles, but apparently the parents refused to make Peter wear glasses. After the school medical examination the usual form was sent to the father with an intimation that if he could not afford to send the boy to a selected doctor he could send him to the clinic. This communication, and a subsequent reminder, the father ignored. When charged with neglect he challenged the system of school examination; he was willing to concede that science had its uses but he declared it was unreasonable to test a child of ten in the same manner as a full grown adult. The mother in her evidence said it was cruel to make the boy wear glasses if he could get along without them. The father not only disputed the [illegible] or the wearing of spectacles but defended himself on the higher ground that his personal authority had been interfered with by a set of bureaucrats The jury agreed with him, and after a short retirement, found a verdict of "not guilty" Experience suggests that, had the case been disposed of by magistrates, the result might have been different

The prosecution must prove that neglect under Section 1 of the Children and Young Persons Act was wilful That is to say, it must be deliberate and intentional, not accidental or by mistake, the mind must go with the action So said Lord Russell of Killowen in R *v* Senior in 1899 Where a jury found a verdict of wilful neglect and, after a pause, added the words "through ignorance" the Court of Criminal Appeal decided in R *v* Petch that the added words did not negative the finding In the Hadwen proceedings [1] the court seemed to go so far as to say that if a man were so prejudiced as to be unwilling to avail himself of the discoveries of medical science, he might be guilty of wilful neglect The decisive element in prosecutions such as that at Portsmouth last week is the strength of the medical evidence, each case must be decided on its merits In R *v* de Crespigny (1912) justices convicted a father of neglect to provide medical aid inasmuch as he refused to allow his child to be operated on for cleft palate The High Court refused to interfere, the case was one of fact for the justices The justices have to give their minds to the nature of the operation and the reasonableness of the refusal. There was an instructive decision in 1914 in Oakey *v* Jackson Jackson's 13 year old child had adenoids and the only possible remedy was a surgical operation It was not a dangerous operation, though counsel argued that it required an anæsthetic, and that the administration of an anæsthetic must involve some element of danger The father refused to consent to the operation and the justices held that this did not amount to wilfully neglecting the child in a manner likely to cause injury to health On appeal Darling, J, said it was not necessary to know much about surgery to know that the operation for the removal of adenoids was very common in the case of children, and that a failure to perform the operation might result in danger to the child s life if the child should happen to be attacked by illness The High Court sent the case back to the magistrates, it expressed the opinion that they might very properly have convicted Jackson The parent was under a legal liability to allow the operation if the refusal was in the circumstances a failure to provide adequate medical aid. It was a question of the facts of the particular case "A refusal to allow an operation is not necessarily such a failure to provide adequate medical aid as to amount to wilful neglect causing injury to health, the justices must take into consideration the nature of the operation and the reasonableness of the parent's refusal to permit it" Mr Justice Avory added the pithy remark that one matter for consideration by the justices was whether the person who advises the operation is a qualified medical practitioner or merely some irresponsible person Applying this judgment to the Portsmouth case it is tempting to remark that the equipment of a child with spectacles as a remedy for defective vision is at least as common as the operation for removing adenoids, and that, if Mr Justice Avory s dictum receives full consideration, the opinion of the medical officer on the question whether the spectacles were necessary for Peter ought to outweigh the opinion of Peter s father

MENTAL HYGIÈNE

THE SECOND INTERNATIONAL CONGRESS

THE congress was held in Paris at the Maison de la Chimie on July 19th–24th There was an attendance of over three hundred delegates from forty countries Sir Laurence Brock, Sir Hubert Bond, Dr Kate Fraser, and Prof D K Henderson officially represented His Majesty's Government, and Dr Hugh Crichton Miller, Dr Doris Odlum, and Dr J R Rees the National Council for Mental Hygiene

THE STERILISATION ISSUE

An important discussion followed the opening papers of Prof Rüdin of Munich and Dr H C Taylor of New York on eugenics and sterilisation in the prevention of mental illness Prof. Rüdin believes that the only method of extirpating hereditary mental disorders is by preventing the propagation of tainted sex cells by the humane method of sterilisation and other eliminative eugenic measures For this purpose he insisted that it was useless to leave the initiative in the hands of the sufferers or their relatives, the decision must be made by others It should be regarded as a public health service requiring doctors with a strong sense of public duty and thoroughly versed both in the biology of human inheritance and in the art of diagnosis There must also be intensive propaganda to educate the public in eugenic ideas The mental specialist had an absolute duty, he insisted, to put the hereditary health of the people first War, by producing the most extreme counter selection, was their greatest enemy

Dr Taylor reviewed the law and practice in thirty of the United States of America that have at one time or another passed sterilisation laws He pointed out that the only State in which the experiment had been carried out on a large enough scale to supply scientific evidence about its efficacy was California He was strongly in favour of the voluntary as opposed to the compulsory principle for two main reasons In the first place, where the measure lacked public support no one would be sterilised even if compulsory clauses were in force, whereas if public support of sterilisation was forthcoming compulsory clauses would be unnecessary Secondly, our knowledge of hereditary transmission of mental disorder was still very limited Moreover, it is probable that even if all the feeble minded could be sterilised the practical effect would be comparatively slight Punnit had stated that 10 per cent of the whole American population were probably carriers of mental defect and that it would require eight thousand years to eliminate these defects by sterilising only those who were actually feeble minded

The lively discussion that followed showed a unanimous opposition to the compulsory principle enunciated by Prof Rüdin A valuable contribution was made by Sir Laurence Brock, chairman of the Board of Control and also of the departmental committee that recently investigated the case for sterilisation in this country and issued a report wholly in favour of voluntary eugenic sterilisation He clearly brought out the disadvantages of a compulsory measure, pointing out the danger of producing secrecy and the evasion of an unwelcome law Such a measure would also, he said, be entirely unjustifiable owing to our imperfect knowledge of heredity and because of the risk of destroying the wheat with the chaff He admitted that the process of elimination would inevitably be very gradual Nevertheless he considered that in the evidence that his committee had collected there was ample justification for passing a measure of voluntary sterilisation for those in whom there was a recognised danger of transmitting hereditary mental disorder or defect

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[1] See *Lancet* Nov 8th 1924 Spec Suppl p 65

Prof Rüdin in replying strongly reaffirmed his belief that compulsory sterilisation was the only practical method of dealing with the problem

The extensive and varied programme also included discussions on the following:

Mental hygien and sex, opened by Dr J M Sacristan (Madrid) mental hygiene in the home by Dr Corrado Tumiati (Florence) mental hygiene in the school and university by Prof Gonzalo Bosch (Buenos Aires); legislation in relation to the abnormal child by Prof G Vermeylen (Brussels) Miss Evelyn Fox (London) also participating mental hygiene in relation to intellectual pursuits by Dr C S Myers (London) mental hygiene and the professions by Prof J M Lahy (Paris) mental hygiene and the town-dweller by Prof Levi Bianchini (Italy) the rôle of heredity and of the constitutional make up in the ætiology of mental disorder by Prof Ernst Kretschmer (Marburg) the prevention of nervous and mental disorders of toxi infective origin, by Dr L Marchand (Paris); the rôle of social conditions in the ætiology of mental disorder by Prof E Mira (Barcelona) the social and individual prevention of suicide by Prof D K. Henderson (Edinburgh) proposals for an international classification of mental disorders by Sir Hubert Bond (London); the unification of international psychiatric statistics by Dr H Bersot (Switzerland) research and propaganda in relation to mental hygiene by Prof Auguste Wimmer (Copenhagen) and Prof J P Porto Carrero (Rio de Janeiro) Other subjects were the prevention of alcoholism and of drug addiction; the organisation of a centre of preventive mental hygiene; and mental hygiene in relation to crime and the law

Valuable as the congress proved itself as a medium *for the interchange of ideas and for its social contacts* it is to be regretted that the programme was so heavily charged that it was necessary to curtail the time for discussion It is to be hoped that in future congresses this pitfall will be avoided.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM F R C S (1936)

I

THERE is much to be said for Sunday breakfast done in proper fashion alone late completely oblivious of the imminent lunch and with at least three papers An uneasy conscience about the medical literature not read during the week leads me, with the toast to paragraphs of quasi medical interest The Dionne children continue in the best of health a surgeon in Paris bisects a fish and restores it to life a Hungarian peasant marries and has a child at the age of hundred and thirty-eight From these it is an easy step to the middle page and Europe at the Cross Roads. The transition is still easier and my conscience even lighter if my eyes have first struck a paragraph or two by or about one of those whom Moynihan calls medical truants I have never felt that this cap best fitted those to whom it was applied The doctor or medical student who abandons medicine and subsequently as tinker tailor soldier sailor becomes distinguished, does not absent himself from his work; he changes it Medical truants suggest to me those doctors who intermittently leave their doctoring for the pursuit of other vocations and while practising other work remain indelibly the medico No field is more fecund in examples of both than literature nor is it possible to let a classification of medical authors rest at only two subdivisions a *third at least* can be included. At one end of the scale can be put those whose departures from medicine have been final and complete Their medical education may have helped them in the attainment of a broader humanity or a deeper cynicism and their technical knowledge may serve in the construction of an occasional medical plot but it is primarily as authors that they are and would wish to be considered Maugham and Smollett are easily remembered examples and it does not seem to me that either is a truant In an equally distinct group come the compilers of essays and reflections of the Consecratio Medici or the Æquanimitas type and who thinks of Cushing or of Osler as a medical truant? Between these two are the part time doctor novelists and writers of the confessions from the consulting room for whom truant with all its associations would seem a fitting title Their work in fiction or in reminiscence abounds with hospital anecdote their characters are largely patients and doctors and the very smell of the theatre struggles from their pages Their monopoly of the medical situation in current literature appears almost complete, and it is a rare layman who dares to write on this preserve in other than the most objective terms.

* * *

The public is no longer dependent on the technically uninformed for extracting the last ounce of sentimentality from the sick bed and this taste for the mawkish is increasingly well served by part time doctors There is no evidence that a wide market for professional confidences is going unnurtured and my Sunday morning seldom passes without the gentle melancholy which follows news of further additions to this field Even more certain of attention regardless of merit is any work which purports to expose dishonesty in the profession The crook lawyer and the business shark can attract per se little notice. The charlatan practitioner still commands an immediate and certain publicity and shares with the renegade priest a wide uncritical but steady public

* * *

That euphonious transatlantic importation the medical racket which in the press of its origin appears to cover any transaction involving more than one doctor is finding a ready adoption in our Sunday press with the modification that its use carries a definite implication of palm greasing of shadiness and dishonesty Any account of the medical racket can challenge the headlines of How to be happy though a Film Actor and I confess it puzzles me The tearing of the veil that exists between doctor and public in parts of his professional life with the spectacle of a lapse in one whose work entails a rigid code of professional life may explain this interest but I think it battens more on that taste which is largely served by the divorce and police-court news It is becoming plain that medical rackets are free game for the medical truants and on the whole their efforts are more impressive If a man conceives himself to be the Dickens of his age intimate knowledge of and familiarity with his subject are indispensable Add honesty, both in belief that a situation exists which needs redress, and in presentation of his material, and such a reformer is bound to command the attention of the profession

* * *

I have mentioned some examples of doctors who, having severed completely their medical connexion, had established for themselves positions as writers which make it impossible for them to be considered with the parti coloured galaxy who mix their ink with the pills Since 1931 A J Cronin has established a considerable reputation by novels which, happily combining succés d'estime with large sales, drew no support from privileged peeps at human frailty This author's position seemed quite clear, he could *not* be considered with any others than those of the first group

On Sunday the first account of Dr Cronin's (or perhaps since 1931 he might prefer to be called Mr) “The Citadel” affected my blood pressure more than my conviction After Mr Straus's urbane appreciations of its literary merits, I lost the subjective sensations of a hypertensive crisis, returned to the first sensational account and reconsidered it Here, I gathered, is the story of a young provincial graduate, of some academic ability, many ideals, and much ill defined ambition, who, after practice in Wales and as a medical inspector of mines, starts a quasi consultant practice in the West End. He is poor and has had no previous experience of medical practice in London He is without good honorary appointments, and in the absence of first hand knowledge of Harley street practitioners, lacks sufficient judgment to avoid the purely meretricious He comes in contact with dichotomy, he meets doctors who give injections of sterile water, send patients to expensive nursing homes in which they are financially interested, and perform on them unnecessary and harmful investigations He succumbs to these practices himself, is unhappy, and walks out of his practice after easing his rebelling conscience in a paroxysm of kettle blacking Shorn of its trimmings, such a story may have a basis in fact, it even appeared that redress of such abuses might be accelerated by an airing But I did suppose that the visitation in the press of the sins of a few on the heads of all Harley street would be an exaggeration of Mr Cronin s theme In the book itself I expected that Mr Cronin would be at pains to define the minority about whom these grave charges were made It seemed to me that the hero's approach to the West End had been carefully chosen to show that it was on just such personable young men lacking knowledge of London consultants, and without funds to withstand their offers, that the Jackals—I quote Mr Cronin—on the borderland of reputable practice, relied for patients I was mistaken In subsequent interviews, it appears, Mr Cronin imputes these practices to a much wider field, although in a generous sentence of one interview the existence of some honest consultants is conceded. By his own account Mr Cronin has had experience as a medical inspector of mines and of practice in the West End It is possibly the accident of biography coupled with (if I may adapt the Bishop of Durham on another character) his strong convictions and lofty character which has resulted in this faulty judgment and lack of proper perspective This is unfortunate in that the charges, having been allowed to assume the fantastic proportions of a nightmare, may receive less of that earnest attention that they deserve The more so as “The Citadel” is only terminally about Harley street It is much more concerned with illustrating deficiencies and inadequacies in general practice and departmental medicine No distinction is drawn in it between faults dependent on the nature of medical service in this country and those inherent in any human organisation There are rogues with M.B 's and accidie is not unknown in doctors It is not possible to legislate prophylactically against either The qualifying curriculum may be extended, the G P as a unit may be replaced by specialist groups, post graduate refresher courses may become compulsory These and other matters are already prominent but the type of public sentiment likely to be agitated by the novel can do little but hinder the reforms at which it aims

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdrs H Hurst to *President* for course, and J Kirker to *Victory* for R N B , Portsmouth

Surg Lt Comdrs H S Marks to *Excellent*, S Jenkinson to *Lucia*, and J B Patrick to *President* for course, and to *Furious*

Surg Lt J W Oliver to be Surg Lt Comdr

Surg Lt G L Hardman to *Weston*

N L Parry, D C Howe, and W G Smith entered as Surg Lts (D) for Short Service and appointed to R N Hospital, Haslar, for courses

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt Comdrs E E Henderson to *Caledonia*, and J B Hutchinson to *Victory*

Surg Sub Lt W H Osborne to be Surg Lt

ROYAL ARMY MEDICAL CORPS

Short Service Commissions Lt (on prob) J B Dancer is secd., under the prov of Art 213, Royal Warrant for Pay and Promotion, 1931

INDIAN MEDICAL SERVICE

Lt Col G T Burke retires

Lts (Temp Commn) to be Capts (Temp Commn) M. L Gujral B N Bhandari, Mohan Singh, S S Alam, B L Kapur, D R Sharma, P S Bassalvi, G N Ahmadi, P M Kaul A K Dev

Indian Medical Department—Asst Surg (1st Cl) E B Walker to be Lt (Sen Asst Surg)

DEATHS IN THE SERVICES

Colonel WILSON RANSON, D S O , who died on August 1st at Hull was born in 1870 the son of Joshua Farrar Ranson of Norwich, and was educated at Edinburgh and St Thomas s Hospital qualifying in 1894 and becoming F R C S Edin in 1898 After serving as assistant surgeon at the County Infirmary, Downpatrick, he joined the R A.M C In 1907 he was in charge of the 15th Regimental District at Beverley In the European war from 1914–19 he was with the British army of the Rhine and was Col D.D M S of the 4th Corps, commanding the 3rd Northumberland Field Ambulance 50th Division the 47th Casualty Clearing Station, 5th Army, as well as the 30th General Hospital He was mentioned in dispatches twice, received the D S O , and was specially promoted in December 1917 At the end of the war he became administrative deputy commissioner of medical services at the Ministry of Pensions and medical superintendent of its hospital at Orpington

Colonel JOSEPH VINCENT MARY BYRNE director of the Army Dental Services died at the Queen Alexandra Military Hospital Millbank, on August 2nd Born in Dublin in 1884 he qualified as L D S (R C S Irel) in 1908 and entered the service as a dental surgeon in 1915 In 1921 he was appointed to a permanent commission in the newly formed Army Dental Corps and spent most of his time in India reaching the rank of senior officer in 1934 and colonel in the following year In February, 1936, he was appointed director

CORRESPONDENCE

PROPHYLACTIC TREATMENT IN OBSTETRICS BY MEANS OF PRONTOSIL AND SULPHANILAMIDE

To the Editor of THE LANCET

SIR,—Great publicity has lately been given in the lay press to the results of treatment with the new drugs of the sulphanilamide group The letter of Dr Colebrook in your issue *of July 31st deploring* the indiscriminate use of potent drugs which are still in the experimental stage is therefore all the more timely

As however Dr Colebrook refers to a paper which I recently communicated to the North of England Obstetrical and Gynæcological Society and which was abstracted in your issue of July 10th I should like to mention in further detail the results obtained. This paper reported the results of the treatment of established puerperal sepsis and also of an investigation into the prophylaxis of puerperal sepsis with prontosil at Walton Hospital during the past year In this investigation alternate cases which had had major obstetrical interference were given prontosil album and the remainder were used as controls A dose of nine tablets, each of 0 3 gramme was given daily for one week commencing shortly after delivery or in a few cases immediately before The only contra-indications to the use of the drug have been the recent treatment of toxæmia of pregnancy with magnesium sulphate or the presence of cyanosis in cases of heart disease. Up to date 180 cases have been given prontosil and there have been 203 cases in the control series The difference in the rate of morbidity by various standards between the two groups is small, but 4 out of the 5 serious cases of sepsis which occurred were in the control series. In no case receiving prontosil has a hæmolytic streptococcus been grown in a lochial culture, though the number of lochial cultures made in this series has been much larger than in the control series. In this latter series however hæmolytic streptococci have been cultured in 7 cases, and the only two organisms which have been typed have both been proved to belong to the pathogenic A group

These findings seem to suggest that sulphanilamide has some value in the prevention of infection with a hæmolytic streptococcus in cases that have had interference in labour As Dr Colebrook states there is no evidence that cases that have had interference in labour are any more likely to become infected with a hæmolytic streptococcus than those having had a normal labour These cases were chosen for investigation however because a control series could be more easily obtained and because for various practical reasons they could be more closely observed. It seems justifiable to assume that the same conclusions as regards the hæmolytic streptococcus, can be applied to normal deliveries

Any investigation of this kind can only be made with full bacteriological examination, and with a large series of cases over a prolonged period of time for infection with a virulent hæmolytic streptococcus must be a relatively uncommon event in any well conducted institution It is not suggested from the above findings that there is any justification at present for the routine use of these drugs in either normal or abnormal labour As you indicate in your annotation on p 274 it is possible that the risk of toxic effect from these drugs may be greater than the risk of infection with a hæmolytic streptococcus which as Dr Colebrook points out is a small one. But in the present series up to date apart from cyanosis which has been fairly frequent though seldom persistent no serious toxic effects have been noted, and there has been no apparent effect on the babies At the same time if it can be found possible to protect patients in labour from infection with a hæmolytic streptococcus, it will be a revolutionary advance in obstetrics The path of all who practise obstetrics at the present day is a difficult one as is shown by the results of recent litigation Up to now our knowledge of the ætiology of puerperal sepsis due to the hæmolytic streptococcus has been imperfect but lately largely owing to the work of Dr Colebrook and his colleagues the whole subject has been placed on a sounder foundation and at last we know the source of the infecting organisms. Though the problem of the hæmolytic streptococcus is by no means the whole problem of puerperal sepsis it is certainly the most important problem

We are doubtless only at the beginning of our knowledge of the possibilities of this group of drugs and perhaps we are on the threshold of realising the dream of Ehrlich and of being able to treat bacterial diseases as effectively as we can treat many protozoal diseases The indiscriminate use of these drugs however may do more harm than good and their introduction into obstetrics may only be a tragedy if they are to lead to a neglect of proper technique and to increased interference

I am, Sir yours faithfully

BRYAN WILLIAMS

Walton Hospital Liverpool August 1st.

ECTROPION AND CARDIOVASCULAR DISEASE

To the Editor of THE LANCET

SIR,—During the last four years in general practice I have seen five patients with ectropion of the lower eyelid. Each has also presented a peculiar cardiovascular lesion. The association was discovered fortuitously when the notes of the third patient were entered up in the disease card index.

CASE 1 —An agricultural labourer aged 59 complained of weakness and a little dyspnœa on exertion. The arteries were soft and there was pulsus alternans. Blood pressure: 170 and 140 mm. Hg systolic; 100 mm. diastolic. Heart enlarged apex beat diffuse apical systolic murmur Urine: sp gr 1020 trace of albumin; no casts no other microscopical findings Fundus oculi: no sign of arterio-sclerosis or renal disease Lids: severe double ectropion which had begun in the right lower lid five years ago and in the left four years ago

CASE 2.—A gardener aged 71 complained of continuous and severe headache for a year and giddiness for six months. He was not short of breath Arteries: soft Blood pressure 200/140 Urine: sp gr 1010; trace of albumin. Fundus; no sign of arterio-sclerosis or renal disease Lids severe ectropion in left lower lid right lid is losing elasticity

CASE 3 —A carter aged 70 complained of pain swelling and weakness of the legs His father who died about 80 is alleged to have had double ectropion One sister died at 78 and one at 40 of "swelled legs Two brothers living and healthy aged 78 and 60 In November 1933 the patient had a sudden attack of sciatica in his right leg It lasted for several weeks, and was followed by œdema of both legs with painful dusky plaques on the right leg. He also developed chronic conjunctivitis in both eyes and there was slight ectropion He refused any interference with a mouthful of septic teeth He has no dyspnœa, no headache and eats well. Arteries: soft Blood pressure: 256/124 Triple rhythm of the heart Urine: sp gr

1008, trace of albumin, no casts Fundus no sign of arterio sclerosis or renal disease Lids early ectropion of both eyes

CASE 4—A thatcher's wife, aged 67, makes no complaint, although she admits to some dyspnœa on exertion Arteries soft Blood pressure 198/130 Urine sp gr 1018, no albumin, no casts Fundus appears normal but is difficult to examine because of opacity of lenses Lids early ectropion of right eye

CASE 5—A woman, aged 74, has suffered from early ectropion of the right eye for a year Her general condition is very good, she has no dyspnœa or œdema, and she does a full day's work. Arteries soft Blood pressure 214/112 Urine trace of albumin.

These five cases have in common (a) ectropion, (b) a high diastolic pressure (four of them over 120 mm Hg), (c) a high systolic pressure except in Case 1 where the heart is obviously failing, (d) soft arteries, (e) no evidence of a renal lesion (the trace of albumin was always very slight), (f) an activity and sense of well being which contrasts strangely with the gravity of the physical signs None of the *patients is confined to his house* Case 1 walks *six* miles to see me without troubling, and feels fit to start work again, Case 2 spends most of his days walking, and Case 3 stoutly maintains that he feels very well

This represents my total bag of ectropion, but it would be easy for others to discover whether this association is purely fortuitous, or whether there is in fact a relationship between ectropion and cardiovascular disease, or possibly even that a syndrome exists in which high diastolic and high pulse pressure are associated with ectropion of the lower lids

I am, Sir, yours faithfully,

R E HOPE SIMPSON

Beaminster Dorset July 24th

THE REVISED MEDICAL CURRICULUM

To the Editor of THE LANCET

SIR,—The principal issue between Prof Clark and myself is whether the "resolutions" (brave words) of the General Medical Council have a mandatory or merely optional effect on the medical schools Of course, the schools can do more both as regards the standard and duration of their teaching than the "resolutions" require, but the crucial question is Can they do less? Both Prof Leathes and Prof Clark seem to think that the Council's "resolutions" are confined to merely offering suggestions to the schools Prof Leathes's phrase that their function is to 'call attention to the importance" of certain subjects of study seems to confirm this implication

The public cherishes the notion that the G M C is an imperious autocrat both in its disciplinary and educational authority, and that it has the statutory obligation of *directing* medical education If the G M C is in fact the feeble advisory body which these two professors picture it to be then the public has been misled and this position is surely dangerous to our profession especially at a time when it is being so widely criticised

In an article on the G M C which I contributed to the *Nineteenth Century and After* of February, 1926, written with the approval and help of the then president I stressed the essential impotence of the Council on its disciplinary side, revealed at that date by its inability to restore Dr Axham to its Register until the College which had originally licensed him had removed its veto (And I suggested that new legislative powers for it might be desirable) On its educational side however the G M C possesses the amplest powers, conferred by Parliament If these have fallen into desuetude through disuse the time would seem ripe for their vigorous assertion

Perhaps the most mischievous result of the continuous enlargement of the curriculum is, as I pointed out, the increasing restriction of medical study to the relatively well to do This matter is so important that I make no apology for mentioning it again.

The University Grants Committee report for 1935–1936 shows that of a total of 12,923 medical students in England, Scotland, and Wales, 5618 were students of the London schools The number given for Sheffield University was 202 Expert independent investigation of the financial conditions prevailing in London schools demonstrated that my contention was accurate as regards these schools and therefore I submit, considering the numbers dealt with, may be assumed to be accurate for the residue Does Prof Clark really think that his impression to the contrary, supported as it is by no independent evidence, and presumably based on the consideration of the mere fraction of cases at his own institution, can outweigh a conclusion founded on figures constituting nearly half of the whole number of medical students in Great Britain?

I am, Sir, yours faithfully,

E GRAHAM LITTLE

Wimpole street W, August 2nd

ŒSTRIN IN TREATMENT OF CUSHING'S SYNDROME

To the Editor of THE LANCET

SIR,—Dr Morton Gill's results recorded in your issue of July 10th differ in some respects from those I obtained in a series of similar cases treated with Progynon B (Schering), which I reported to the Association for the Study of Internal Secretions on June 8th, 1937

My results confirm Dr Gill's observation on the relief of the severe headaches, moreover a number of the patients were relieved of severe facial neuralgia which had not been benefited by extractions of suspected teeth Clinically the headaches of the Cushing syndrome are of the type found in hypomenorrhœic states, the hypo ovarian syndrome, and at the menopause Their onset has been found to be concurrent with the abnormal appearance or presence of prolan A in the urine Further, it has been shown by Albright, Frank, and others that this prolan disappears from the urine when the patient is given sufficient doses of progynon B or progynon D H—the flushes and headaches disappearing simultaneously When therapy is discontinued the prolan reappears and the symptoms recur

In 1935 Nelson noted the similarity of the rat castrate cells (basophil cells of the anterior pituitary) to the basophil cells of the Cushing syndrome as described by Crooke, and because of this he suggested the use of œstrin in the Cushing syndrome Since 1933 I have been treating cases diagnosed as Cushing syndrome with large doses of progynon benzoate (Schering) and I find that the hypertension is reduced and the general clinical condition improved. My cases, however, have been treated for 1–4 years instead of the short period observed by Dr Gill I find that the abnormal systolic pressure is reduced by 20–40 mm of mercury by the repeated injection of 50 000–100,000 I U of progynon B The first patient treated corresponds to Case 2 of Dr Gill's series, and she too had failed to maintain the improvement obtained from two courses of X ray therapy to the pituitary gland. About eight weeks after completing each course the headaches reappeared and the systolic pressure rose. About 12–24 hours after each radiation there was an attack of migraine and because of the excellent results obtained with progynon B in migraine associated with the hypo ovarian state she was given 50 000 I U of progynon B four hours before each radiation—a measure which resulted in the relief or aborting of the attack X ray therapy was discontinued when the symptoms recurred but the patient was given progynon B for her migraine In six months her general state had much improved and the migraine attacks, which were not relieved by morphine were under reasonable control. The systolic pressure of 165 mm of mercury was reduced to 120; the patient lost her abnormal hair the reddish striæ disappeared and her weight fell the physical and mental picture was completely changed.

Similar results were observed in five cases As controls a few patients were given interrupted therapy One was given insufficient dosage of œstrin—as judged by the other cases—and showed increase of plethora obesity physical disability hypertrichosis striæ headaches and facial neuralgia her systolic pressure rose from 120 mm of mercury to 155 and the menstrual flow diminished. After 18 months intensive therapy was instituted with complete relief of headaches and control of the systolic pressure Two patients received enough treatment to demonstrate the relief of the head pains and reduction of systolic pressure Therapy was then discontinued and over a year later (August 1935) both died of pneumonia

This form of treatment has a definite pattern Intensive therapy is required at first to relieve the headaches and reduce the abnormal systolic pressure. It will be noted that premenstrually or at the period when menses should occur the patient may complain of hot flushes suffocative attacks palpitation anorexia nausea headache depression or irritability and it will be found that these symptoms are associated with a rise in the systolic pressure It is reasonable to presume that the dosage of œstrin used in the earlier weeks of the four week cycle will be insufficient for the premenstrual period which is associated with a more active phase of anterior lobe gonadal activity as is shown by the premenstrual rise of blood œstrin in normal persons, and in practice one finds that by doubling or tripling the dosage the headache is relieved or aborted and the rising systolic pressure is reduced It is preferable to give the increased dosage in two portions for example 100 000 I U in the evening and 50 000 I U or more in the morning After this cyclic exacerbation is past the patient is given weekly or bi weekly 50 000 I U for the next three weeks—a larger dose may be required in very severe cases—and the dosage is again increased when the fourth week of the cycle returns This procedure is maintained for months if required but it is usually found that in course of time the dosage can be reduced and the interval between injections increased

In patients regularly given intensive therapy it is observed that the formerly hypoplastic breasts show parenchymatous hypertrophy and that a corresponding reaction also takes place in the uterus At this period the patient has a feeling of well being and often discontinues therapy of her own accord. Later she comes back because of a return of the headaches and other symptoms and it is found that the breasts and uterus have returned to the former hypoplastic state It appears that the breasts especially store œstrin and it is this source of œstrin which maintains a symptom free state when therapy has been discontinued for 8–12 weeks.

From this therapeutic survey the following conclusions have been drawn (1) the earlier that progynon B therapy is started the more favourable is the prognosis and the chance of preventing secondary non-endocrine changes (2) the success attained depends directly on the amount and continuity of therapy (3) the duration of therapy required is related to the duration of the syndrome before œstrin was given In 5 of my 11 cases (all females; married 9 single 2) pregnancy can be directly correlated to the onset of the syndrome

Dr Gill's Case 1 because of the hypertrophied clitoris belongs clinically to the adrenogenital syndrome I believe rather than the Cushing syndrome The two have a common pathological factor however —namely hyperplastic (hypertrophy) or adenomatous changes in the adrenal cortex In such cases as this treated with Progynon B Proluton (Schering) and Ovarian Concentrate (Armour) we have observed marked reduction of abnormal and normal levels of blood pressure and especially a reduction in the hypertrichosis and a lessening of the coarseness of the hair which remains Ovarian concentrate was given orally (4–8 capsules a day) to a Jewish girl of 12½ who was obese and hypertrichotic and had a systolic pressure of 155 mm of mercury In eighteen months she was of normal weight had lost much of her excessive hair and had a normal systolic pressure, besides being more active mentally and physically Comparing progynon B and proluton in the Cushing syndrome and the adrenogenital syndrome we may say that progynon B relieves the headache and reduces the abnormal systolic pressure whereas proluton does not relieve the headache but does reduce the systolic blood pressure and maintain it better at the reduced level Accordingly during the fourth week of the 28 day cycle proluton (1 or 2 I U) is combined with progynon B and this seems to give better results than progynon B alone It is my belief that the adrenal cortex and the luteal factor of the ovary are antagonistic in the same manner that œstrin inhibits the anterior lobe With such a conception we can complete the interrelationship of a triad of glands—the anterior lobe of the pituitary the adrenal cortex and the gonads—which are embryologically physiologically pathologically and clinically in intimate relationship

I have observed no ill effects from high single dosage (450 000 I U) or frequent five total dosage (2 000 000 I U) and continued weekly dosage (50 000 to 200 000 I U) over very long periods of time (1–4 years) On the contrary I have observed nothing but benefit. It should be emphasised however that there is a benign and a malignant form of Cushing syndrome and that progynon B therapy is applicable only in the benign form though it can be used for symptomatic relief in the malignant form

Endocrine therapy if based on animal experiments must have equivalent ratios maintained Dr Gill quotes Dr Spence's study of œstrin therapy in hyper thyroid states, which has been criticised in your columns on grounds of failure to maintain the experimental ratio of therapeutic agent to body weight It is quite probable that an inadequate supply of progynon B operated both in Dr Spence's and in Dr Gill's study and mention of this possibility must be made in any criticism of their results

I am Sir yours faithfully

CHARLES W DUNN

Philadelphia Pa, U.S.A July [illegible]1st.

PASTORAL PSYCHOTHERAPY

To the Editor of THE LANCET

SIR,—I know nothing about the Guild of Pastoral Psychotherapy—(in passing, its title suggests pleasantly that we might save our souls in tending sheep)—but Dr Clifford Allen's letter about it raises some general questions which I cannot help asking

No doubt we are the people and wisdom shall die with us, but is it necessary to say so quite so loudly and so often as we do ? Is it not precisely this habit of claiming a monopoly in season and out which makes us, as a profession, so unpopular with many of our fellow citizens (to our hurt and their's) ?

Is there any justification for Dr Allen's implied assertion that only qualified medical men are fit to minister to sick souls ? Would it not be true to say that our training, as it stands, assists us scarcely at all to see into our patients' minds or to help them in their emotional perplexities ?

Are not many of the profoundest truths of psychology to be found concisely and vividly stated in the Gospels and may not the study of religion provide as good a foundation for the practice of mind healing as a study of the physical sciences, medicine, surgery, and midwifery ?

Would not the phrase " the viewpoint of the clergy —i.e , right and wrong, sin, and the need for punishment " be exactly paralleled in its unwarrantable assumptions by such a phrase as " the viewpoint of the doctors—i.e , complete psycho analysis as the only true remedy for neurosis " ?

Does not each one of us bristle a little when he is assumed to hold certain views he has never expressed because he belongs to a group called (with a faint tinge of contempt) " The Doctors " ?

I am, Sir, yours faithfully,

LINDSEY W BATTEN

Lyndhurst road N W July 30th

To the Editor of THE LANCET

SIR,—Dr Clifford Allen has three qualities which, however admirable they may be in other ways, handicap him in his controversy with the Guild of Pastoral Psychotherapy He is an uncompromising Freudian and therefore does not speak for the majority of British psychotherapists , he displays an anti religious bias which must make him fundamentally unsympathetic to the Guild's activities , and he has an unfashionable horror of unqualified practice It is this last characteristic which interests me.

There are two main reasons for the medical profession's objection to unqualified practice The first, which a Freudian like Dr Allen must believe to be the dominating one, is that it conflicts with our deepest self interest It is, of course, hard that we should have worked seven years to enter what we hoped was a monopolistic business only to find competitors firmly entrenched who knew nothing, let us say, of the relationships of the lesser sac of the peritoneum It is still more unfortunate for the psychotherapists who practise in a Tom Tiddler's ground where the Christian Scientists, the auto suggestionists, and the gentlemen who run correspondence courses for the cure of erythrophobia have already staked out claims , a ground, moreover, in which the parent, the pedagogue, the priest, and the philosopher all have legitimate interests The public does not appreciate the unhappy lot of the psychotherapist It will go for treatment to the man who gives the best results and the man who does not cure will, in the long run, be driven out of business In no branch of the healing art are results more easy for the patient to assess (" Whereas I was blind, now I see ")

The second objection which the medical profession advances to unqualified practice is that it is against the public interest It is amusing to see Dr Allen trying to make the flesh of these unqualified psychotherapists creep with his warnings of cerebral tumours and G P I , just as the orthopædic surgeons tried to frighten Sir Herbert Barker with the bogy of tuberculous joints Sir Herbert was not deterred and I do not suppose the Guild will be The incidence of G.P I in the congregations of the faithful cannot be high

I doubt if Dr Allen has fully assimilated the lesson of Sir Herbert Barker's recent demonstration of his manipulative technique to the British Orthopædic Association It is that the medical profession now objects to unqualified practice only when such practice is bad in itself Dr Allen may believe that the practice of the Guild is likely to be bad , he has given no adequate reason for such a belief I know nothing of the work of the Guild nor which medical psychotherapists are supporting it—but I have recently been steering a patient of mine through an anxiety state who some years ago had a very thorough and prolonged analysis (not at my instance) by a minister of religion with complete cure The fact that she has come easily through her relapse is entirely due, I believe, to her exceptional knowledge of her own mental background.

I am, Sir, yours faithfully,

Derby August 2nd DOUGLAS HUBBLE

TRUE BLOOD-SUGAR VALUES

To the Editor of THE LANCET

SIR,—The true sugar value of blood, as against the total reducing substances expressed as sugar, is a matter which has exercised many workers It is generally accepted now that the reduction in the amount of reducing substances, brought about by fermentation with washed yeast, represents the actual glucose content Three general types of procedure have been used in attempts to approximate or reach this true sugar value by means which do not require the agency of a living organism (1) special sugar reagents, mostly of the alkaline copper variety, have been developed which are selectively reduced by sugar and not by the non sugar reducing substances of the blood , (2) non sugar reducing substances have been partially or completely eliminated by precipitation using special protein precipitating agents , (3) advantage has been taken of the fact that most of the non sugar reducing substances are confined to the cells and do not appear in the filtrate made by deproteinising a sample of blood which has been diluted with isotonic sodium sulphate instead of being laked with water

In attempting completely to eliminate the non sugar reducing substances a combination of the second and third methods was proposed in a recent communication from this laboratory (King, Haslewood, and Delory 1937) To this end Somogyi's (1930) zinc hydroxide precipitation was coupled with Herbert and Bourne's (1930) unlaked blood procedure We have now found that results, lower than the true sugar values, are obtained when the filtrate thus prepared is used with the Harding modification of the Shaffer Hartman copper reagent * This is due to a depression of the activity of the copper reagent by small amounts of zinc which are present in the filtrate (cf also

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* We should like to record our thanks to Dr C R. Lane who first drew our attention to the discrepancy

Benedict 1931) We were therefore mistaken in stating that the true sugar value would be obtained with the procedure outlined.

The Harding copper reagent is one of the most sensitive and convenient of the sugar reagents and it seemed better to discover a filtrate which would give the true sugar value with this reagent than to abandon it for another Tungstic acid deproteinisation leaves as little as 3 mg and occasionally as much as 10 mg per 100 c cm of non-sugar reducing substances (expressed as sugar) when applied to blood diluted with isotonic sodium sulphate zinc hydroxide iron aluminium and copper hydroxides leave no non sugar reducing substance in the filtrate but all fail in one respect or another to be completely suitable Copper tungstate precipitation (Somogyi 1931) has seemed to furnish a thoroughly satisfactory method of deproteinisation which leaves no trace of non sugar reducing substance and introduces nothing in the filtrate which interferes with the activity of the Harding reagent There is no loss of sugar from solution when copper sulphate and sodium tungstate are added and the copper tungstate is filtered off thus 9 99 mg per 100 c.cm were recovered in the filtrate from a glucose solution of stated strength 10 mg which by analysis showed 9 92 mg per 100 c cm Sugar added to blood is completely recovered. Sugar added to filtrates from blood which have been rendered sugar free by fermentation with yeast is satisfactorily recovered. In two representative experiments 102 mg and 241 mg were found against 100 mg and 240 mg added. Finally the sugar value determined on the copper tungstate filtrate is very nearly the true sugar value determined by yeast fermentation Sixty three mg fermentable sugar were found for a normal blood and 64 mg total sugar in the copper tungstate filtrate a normal blood to which sugar had been added gave 185 mg. fermentable sugar and 187 mg in the copper tungstate filtrate and a diabetic blood gave 267 mg and 267 mg It would therefore appear that the sugar value determined by the Harding reagent applied to the copper tungstate filtrate approximates very closely to the true fermentable sugar value of blood.

The procedure for preparing the filtrate is as follows: 0 2 c.cm of capillary blood in 3 2 c cm of isotonic (3 per cent) sodium sulphate is treated with 0 3 c cm of 10 per cent sodium tungstate and 0 3 c cm of 7 per cent. copper sulphate ($CuSO_4 . 5 H_2O$) The mixture is shaken and centrifuged. Two c.cm of the clear supernatant are used with 2 c.cm of the Harding copper reagent for the sugar analysis

We are, Sir yours faithfully

E J KING
G A D HASLEWOOD
G DELORY

British Postgraduate Medical School, London July 21st

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THE BIOCHEMICAL CONTROL OF CANCER

To the Editor of THE LANCET

SIR,—In 1934 my biochemical study of the cancer problem (*Protoplasma* 21 73 22 137) was followed by an outline of a preventive and corrective treatment (*J industr Hyg* 16 212) The corrective treatment has as its object the restoration of the primary phases of the abnormal metabolism specific to malignant growth such as oxidation enzymes including the glutathione equilibrium vitamin E B_1 B_2 &c It consists in (1) the oral administration of baker's yeast in an enzyme bearing medium such as unrefined sugar or honey (glycogen equilibrium) and (2) the injection of certain non toxic sulphur labile compounds to which sodium tetrathionate, cystine disulphoxide as well as dichlorodiethyl sulphide (mustard gas) and methylthionine chloride (methylene blue) belong

Since then the experimental evidence from various sources has lent definite support to these conclusions Thus we find from the work of Roffo [11] and Auler [1] on the concentration of cholesterol in the spleen and tumour tissue and Geschickter and Lewis [6] on the accumulation of sex hormones in connective tissue tumours that sterols œstrin and carcinogenic bodies are linked not only by their constitution and transformation in vitro but actually represent intermediate stages in the ætiology of cancer—in full agreement with my hypothesis Again the recent experimental work of several investigators with methylene blue [3 10] mustard gas [12 2] cystine disulphoxide [8 9] and vitamin E [4 5] although constituting individually but a phase in my corrective measures, gave encouraging results in increasing the resistance to cancer The restorative influence of thio compounds upon the disturbed glutathione equilibrium is well shown by the intravenous and interperitoneal injections of thiosinamine in cases of post-operative glutathione deficiency in the blood liver and kidneys [7]

These available facts definitely point to the potentialities of the complete scheme and warrant its thorough exploration.

I am Sir yours faithfully

MAURICE COPISAROW D Sc

145 Alexandra road, Manchester 16 July 21st

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RESULTS OF CLEANING THE TEETH

To the Editor of THE LANCET

SIR —In your issue of July 24th Dr Bol says that mouth hygiene as commonly practised is of no use in preventing caries Even if it is allowed that it is of some use he has successfully shown (what experience confirms) that it is far from the perfect weapon it is claimed to be It is very rare to find a clean mouth but amongst those who use a toothbrush one is met with indignation if one suggests that the mouth is still dirty Most patients use as Dr Bol says quite unnecessary energy but I would amplify this: this misdirected energy is mainly applied to the upper right teeth and to a less extent to the lower left canine and premolars The front teeth usually receive a violent brushing in the incisal three quarters but since most patients keep the toothbrush outside the mouth instead of wrapping the lips over it while attending to the front teeth the part of the tooth near the gum is sadly neglected. Furthermore the condition of the toothbrush when introduced into the mouth is such that the bacterial condition of the mouth is worse after cleaning the teeth than it was before, owing to the circumstances in which the brush is kept Having been inoculated with bacteria cells and mucus, it is usually hung up, soaking wet, in a warm damp atmosphere

If it be thought by any that they use the toothbrush sufficiently well to clean their teeth I would suggest that they swab over the teeth with a solution of methylene blue, or even iodine, and then rinse the mouth Clean and polished teeth will not accept the stain but mucus plaques receive the dye readily In fact, when I desire to make the experiment really spectacular, I invite the patients to clean their teeth for as long as they like in my consulting-room with a new toothbrush and whatever cleaning material they fancy and then I apply the methylene blue A liberal estimate of those who succeed in cleaning all surfaces of the teeth reasonably well would be 20 per cent The successful cleaning of the teeth depends, in my opinion, upon a much improved acquaintance with the geography of one's mouth and a careful endeavour to clean it as follows

1 A careful inspection of the teeth should be made after the application of methylene blue when a real effort has been made to reach points previously stained, and followed by a suitable correction of the faults in cleaning When this has been done, the correct method of cleaning that mouth has been found It may be quite different from the requirements of another case

2 As many toothbrushes should be kept as times the teeth are cleaned during the twenty four hours (usually two) Both brushes when new are soaked in an antiseptic solution One is then taken out, shaken free of the solution rinsed, and stood up with its handle in the solution to dry, and this brush is used when the teeth are next cleaned After use it is rinsed under the tap and the bristles put into the solution while the other is shaken free of fluid and stood up to dry In this way there is always a dry clean brush for use which is not so likely to introduce a swarm of bacteria into the mouth A pound jam jar with a little conical paper cap to keep out the dust answers admirably

3 A better effect can be obtained if a mucus coagulant is used as a mouthwash just before brushing

4 The teeth should be cleaned after each meal If this is impossible almost equally good results can be obtained if they are cleaned *after* breakfast and after the last food taken at night

The change which takes place in the mouths of patients who have been patiently shown by means of the stain the places which they fail to clean and who keep their brushes as above described is truly remarkable, and in the case of children with severe caries who have taken all kinds of calcium containing material without benefit, the method is an outstanding success It should be noted that Dr Bol does not speak of 'pyorrhœa' which is unquestionably commoner in the mouths of those who do not use a toothbrush, and I cannot agree with him that a toothbrush correctly used leads to recession of the gums

Soap containing dentifrices are open to many objections It is well known that the addition of antiseptic to soap reduces both the antiseptic power of the soap and of the antiseptic, and when in addition to that, chalk, its natural enemy, is placed into a tube along with the soap it is difficult to see what justification remains

With all the objections to the toothbrush as at present used—and not the least of these is the fact that no toothbrush as yet offered to the public has bristles anything like fine enough to clean out occlusal fissures—it must remain the most valuable instrument now available to the patient, apart from dental treatment and correct diet, in defence against caries and probably paradontal disease, and if used in conjunction with a spray it will, as I have proved to myself over and over again, keep a mouth in good condition If the toothbrush is to be condemned because of the results obtained with it generally, it would be as logical to discard iodine because when applied to part of an affected area on a septic swab it fails to leave the whole surface clean and sterile

I am, Sir, yours faithfully,

CHRISTOPHER DANIELS

Grosvenor-street W , July 28th

PUBLIC HEALTH

L C C Pathological Service Extending

FORTY of the L C C hospitals have laboratories in 23 of which a whole time technician is employed The central pathological service is at the disposal of 65 general and special hospitals, and 9 institutions, containing in all some 38,500 beds This service consists of 7 group laboratories, a central histological laboratory, and an antitoxin establishment The work carried out there has increased much in the last two years, in some laboratories it has more than doubled, while the figures for 1937 show a further increase The present central staff numbers 164, of whom 19 have medical qualifications, and at the last meeting of the L C C leave was obtained to make 23 new appointments Additional assistant pathologists are to be attached to each of the group laboratories and to the histological laboratory to afford more time for research work, for visiting hospitals and maintaining close coöperation with the clinical side The need for such large scale additions is best illustrated by a bare recital of the fact that during 1936 nearly half a million examinations were carried out in the laboratories as a whole

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 24TH, 1937

Notifications —The following cases of infectious disease were notified during the week Small-pox, 0 , scarlet fever, 1618 , diphtheria, 906 , enteric fever, 28 , pneumonia (primary or influenzal), 445 , puerperal fever, 46 , puerperal pyrexia, 118 , cerebrospinal fever, 13 , acute poliomyelitis, 18 , acute polio-encephalitis, 1 , encephalitis lethargica, 7 , dysentery, 22 , ophthalmia neonatorum, 117 No case of cholera, plague, or typhus fever was notified during the week

The number of cases in the Infectious Hospitals of the London County Council on July 30th was 2970 which included Scarlet fever 774 diphtheria 767 measles 176 whooping cough 493 puerperal fever, 17 mothers (plus 10 babies) encephalitis lethargica 282 poliomyelitis 3 At St Margaret s Hospital there were 20 babies (plus 13 mothers) with ophthalmia neonatorum

Deaths —In 124 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 9 (0) from measles, 5 (1) from scarlet fever, 8 (3) from whooping cough, 30 (2) from diphtheria, 40 (20) from diarrhœa and enteritis under two years, and 6 (0) from influenza The figures in parentheses are those for London itself

The only death from enteric fever occurred at Bolton Sunderland had 3 fatal cases of measles Nottingham 2 Diphtheria was fatal in 22 great towns in 4 cases at Manchester 2 each at Southampton Birkenhead, Newcastle-upon Tyne and Oldham Liverpool had 4 deaths from diarrhœa, Leeds 3

The number of stillbirths notified during the week was 276 (corresponding to a rate of 40 per 1000 total births), including 36 in London

PARIS

(FROM OUR OWN CORRESPONDENT)

DEPOPULATION AND REMEDIES FOR IT

ALL the communications to the Academy of Medicine on June 29th were devoted to the problems of the depopulation of France In a brief historical survey Dr A Couvelaire recalled that in 1813 Napoleon exempted all married Frenchmen from military service with the result that in a year the nuptiality was doubled and 100 000 more births were registered in 1814 than in the previous year To evoke 100,000 extra babies from one's country in a year by the mere stroke of a pen is certainly a remarkable achievement whichever the side credit or debit on which it is recorded in the balance sheet of dictatorship In 1898 in Madagascar Galliéni put a tax on bachelors and freed from taxation the fathers of five children or more All fathers of families were exempted from military service an annual fête in honour of children was instituted and prizes were given to the mothers of the biggest families By these measures Galliéni raised the birth rate in three years from 38 to 51 per 1000 inhabitants Passing to more recent times, the speaker commented with approval on the measures lately adopted in Germany and Italy where young couples are given a loan whose repayment is rendered increasingly easy as the number of their children rises. With four children the parents find their loan converted into a gift The source of this State aid is a tax on bachelors Although Dr Couvelaire attached much importance to the psychic factors what he calls the climat moral in the problem he evidently pinned much if not most of his faith to those administrative measures which he cited from other times and other countries

A second communication made by Dr A Brindeau dealt with the obstetrical factor in depopulation In his opinion sterility in the woman is in about 50 per cent of all cases due to congenital aplasia and in 100 sterile marriages, 20 to 30 must be traced to the husband Though he could not give statistical chapter and verse for his opinion that in Paris there are six or seven confinements for every abortion he seemed to think these figures approximately correct An encouraging feature is the decline in the infant death rate at birth Between 1901 and 1905 it was 45 2 per 1000 whereas in 1934 it was down to 33 per 1000 But during the first ten days of life there are fully as many deaths as at the time of birth Dr J Renault and Mademoiselle G Labeaume presented on the same occasion a report on the provisions made in France for the protection of children According to their report 66 000 of the 1 300 000 children under the age of two years in France enjoy the benefits of the Roussel law enacted for the poorest fraction of the community

STATE CONTROL OF THE USE OF NEW SERA

One of the last decrees promulgated by Monsieur Henri Sellier while he was still Minister of Public Health concerned experiments with new therapeutic sera According to the first article of this new decree, any doctor wishing on his own responsibility and for a limited period to undertake systematic investigations of a new product not yet officially accepted must not enter upon therapeutic essays without the express authorisation of the Minister of Public Health According to the second article such authorisation is valid only for six months, but can be renewed for another six months after the therapeutic results achieved have been reported on to the Minister of Public Health According to the third article the recipient of such authorisation must make no charge for the product in question and it must be tested only in hospitals and similar institutions officially recognised by the Minister of Public Health on the recommendation of the Serums Commission According to the fourth article if the product to be tested comes from abroad, the authorisation must contain a definite statement as to the quantity of this product to be imported into France It will be seen from these regulations that the Ministry of Public Health is anxious to check the too luxuriant growth of therapeutic activities hinging on new untried and possibly dangerous sera.

THE LIMITATIONS OF VOCATIONAL GUIDANCE

The education commission of the Chamber of Deputies recently received in audience a deputation of doctors anxious to give their opinions as representatives of the medical profession on scholastic vocational guidance— orientation professionelle scolaire The object of this deputation was to put a spoke in the wheel of ultra-fervent performers planning to pass through Parliament a Bill dealing with this still ill-explored subject It was pointed out by one member of the deputation that in a debate last year at the Hôtel Dieu in Paris the lack of a strictly scientific basis to scholastic vocational guidance had been stressed it was considered a physiological impossibility to forecast the professional aptitudes of a schoolboy of 12 or 13 and representatives of the Syndicat Médical de Paris had gone so far as to maintain that until a lad is out of his teens it is impossible to tell what calling he should seek at 20 The president of the education commission thanked the deputation for the evidence and opinions given. It remains to be seen whether they will prove an effective check on this latest version of casting a horoscope and spotting the winner

DEATH OF PROF F DE LAPERSONNE

Elegant in his kindly courteous and academically distinguished way de Lapersonne will be both mourned and missed by his many friends and pupils in France He was born in Toulouse in 1853 and it was here that he walked the hospitals and served as an intern In 1879 he became a Paris intern in the services of Péan and Panas His attachment to the latter was the beginning of his ophthalmological career At Lille he was appointed professor of clinical ophthalmology in 1890 and in 1901 he was called back to Paris to fill the chair of ophthalmology at the Hôtel Dieu just vacated by his former master Panas. In 1924 he retired from this post but continued to take an active part in the ophthalmological world In 1931 he was elected president of the French Academy of Medicine He was also for several years president of the International Association for the Prevention of Blindness established with the coöperation of the League of Red Cross Societies. The subjects with which de Lapersonne's name will always be associated are ocular syphilis spinal lymphocytosis microphthalmia, the prevention of purulent ophthalmia in the new born the treatment of trachoma sporotrichosis the artificial ripening of cataract and iridectomy in preparation for cataract operations He was the recipient of many honours at home and abroad and among them may be mentioned the Leslie Dana gold medal of U S.A. origin.

PARLIAMENTARY INTELLIGENCE

BOTH Houses of Parliament adjourned for the summer recess on July 30th. They will reassemble on Oct. 21st unless called together earlier for emergency business.

PASTEURISATION OF MILK

In the House of Commons on July 27th Mr. MACQUISTEN asked leave to introduce a Bill to prohibit the use of the designation "pasteurised" in connexion with the sale of milk, to enforce the use of truly descriptive designations in connexion with the sale of any milk heated above a certain temperature, to amend the Milk and Dairies (Amendment) Act, 1922, and for purposes connected therewith. He said that pasteurised milk was only half-boiled milk cooled down and it would be better for everybody if it was accurately described. Great pressure was being made on the Ministry of Health to make pasteurisation compulsory. The great combines hoped that if that were done all the milk would pass through their hands. If pasteurised or half boiled milk was such a very good thing let the medical profession urge their patients to half-boil and cool it themselves; let them tell their patients never to use milk unless they had first half boiled it. Surely it was far better to kill the germs just before use than let the milk go to dairies where it was liable to be infected again after it had been treated.

Mr. LEONARD, opposing the Bill, said that pasteurisation made a higher standard of pre-treatment of milk essential. In a report showing the results of the examination of samples of pasteurised milk in Glasgow it was stated that "milk which fails to reach a certain standard of cleanliness is unsuitable for treatment in pasteurising plants," and even at the present time pasteurisation was raising the standard of milk production. It was not the case that great pressure was being exerted by particular commercial interests in this matter. The greatest pressure in this matter was coming from the health organisations of the country. In the recent outbreak of typhoid in Bournemouth, where there were hundreds of cases and over 50 deaths, all the cases were definitely traced to one milk dealer who sold milk raw. In a report relating to the city of Toronto he found this statement:—

> "A study of 300 tuberculous children showed that in the group under 14 years of age 15 per cent. of the extra pulmonary forms of the disease were due to the bovine form of tubercle bacillus. Without exception the children infected with this type came from districts in Ontario where pasteurisation was not practised. The history invariably revealed the fact that the child had always, or for some time, been fed on raw milk. This finding is confirmed by the fact that not a single case of bovine tuberculous infection has been encountered in the generation of children raised on pasteurised milk in Toronto where pasteurisation has been in force since 1915."

Finally the Government reports showed conclusively that pasteurisation did not destroy the elements in milk that made for health.

Leave to introduce the Bill was refused without a division.

THE COST OF LIVING

On the motion for the second reading of the Consolidated Fund Bill in the House of Commons on July 28th Mr. DAVID GRENFELL raised the question of the cost of living. He said that the Ministry of Labour figures for July, 1937, showed that the average increase of price over the whole list of commodities had been 55 per cent. above the datum level of 100 per cent. for 1914. The Chancellor of the Exchequer had estimated that the increase of wages during the four years 1933–37 was just over £1,000,000 a week, the gross wages paid being somewhere about £2,000,000,000 a year. The recent report of the Unemployment Assistance Board showed that out of a total of 580,000 applicants for unemployment assistance 315,000 were entirely without resources. The number residing alone as lodgers was 107,500 and of these 100,000 were entirely without resources. Comparable figures for those residing in households of two persons were 103,000 and 59,000; in households of three or four, but without children under fourteen, 101,500 and 10,000; or including households with children under fourteen, 268,000 and 146,000. This showed the large mass of people who lived on the verge of poverty. Of these applicants 45 per cent. were over 45 years of age.

It was an undeniable fact that the cost of living was rising rapidly and wages were moving very slowly. The Government took credit for increasing the amount of work available, but the standard of living for the masses of the people was being steadily lowered. All the efforts of the Minister of Health, laudable enough in purpose, for improving health and fitness must fail if proper food, housing, and clothing were not available. If purchasing power was to be allowed to lag behind the inadequate standard of previous years and there was to be no improvement but rather a degradation of the standard of the people, what was the use of talking about improving health and fitness?

Sir ARNOLD WILSON thought that the figures as quoted by Mr. Grenfell did not justify the assumption that the Government should intervene at this stage to bring the cost of living down. He would far rather they did their best through the Food Council and otherwise to prevent a further rise. The present cost of living was about right and there was no large element in it of profiteering.

Mr. OLIVER STANLEY, President of the Board of Trade, said it was not true that the cost of living had risen, if they compared this year with the years that were less abnormal than 1933, 1932, or 1931. The cost of food index was still below that of July, 1930, and considerably below that of 1929. If they were to insure consumers against being suddenly caught by a scarcity of imported goods it was necessary that they should maintain a quantum of production in this country over a period. The Government had attempted to maintain the balance between giving the maximum assistance possible to our producers and causing the minimum of inconvenience and loss to the consumers. Food was the greatest raw material used by our industries, and therefore it was his business to try if he could to see that there were no undue or abnormal rises in its cost. The importance of distribution was also continually under the Government's review. If the health and happiness of this country did depend on commodity and food prices falling as low as possible, then the years 1930–33 ought to have been years of much greater prosperity than was in fact the case. No one would like to go back to that period.

After further debate, Lieut.-Col. COLVILLE, Financial Secretary to the Treasury, said that in considering the method of inquiry into working class expenditure that was to be undertaken by the Government in the autumn with a view to revising of the basis of the cost of living index the Minister of Labour would have the advantage of a committee representative of various interests, including those of the consumers. Low and falling prices almost invariably accompanied a period of depression and an upward movement one of recovery. The rise in prices over the last four years had been associated with a great increase in working class purchasing power through improvement in employment and wages. This year the Government had to face the immense sum of £862,000,000 as the total estimated national expenditure. Neglect of these financial considerations had in the past in this and other countries tended to endanger those very social services that it must be the strong endeavour of Parliament to preserve.

The Bill was read a second time.

CIVILIAN DEFENCE PLANS

On July 27th in the House of Commons Sir Archibald Sinclair opened a debate on the coördination of the Defence Services by moving a reduction in the salary of the Minister He said civilian defence measures were no less important than the military in strengthening our home front, because it was much more exposed to concentrated air attack than that of any other country To-day H M. Government were still trying to pass on to the ratepayers the cost of defending our towns and cities against foreign attack. While this wrangling was going on they were still neglecting their duty to the civilian population For two years no action had been taken about air raid precautions except in anti-gas courses and ambulance services. In this country nothing was being done for bomb-proof shelters depôts casualty clearing stations transport facilities the protection of telephone exchanges, fire stations, and centres of administration and communication, about which there was a great deal of activity in foreign countries He asked the Minister for the Coördination of Defence what plans were being made on these lines Had the Government got plans for improving the exits from London and other cities to facilitate evacuation and for providing transport to the camps and health and sanitary equipment? Was anything being done about the duplication of fire-fighting equipment and water-supplies? Were measures being planned for making tube railways and tunnels like the Mersey tunnel gas proof? Were plans being made for strengthening our medical and nursing services in times of emergency and with this in view would the Government persuade the Home Office not to discourage men and women refugees with medical and nursing qualifications from settling in this country? All these services would require skilled specially trained and disciplined men Were they being recruited, organised, and trained? There was also the vitally important question of food supply In the last war we held unchallenged supremacy on the sea yet we were reduced at one moment to a few weeks supply of food and there was a real danger of starvation Now to the submarine was added the air peril. This was a problem which involved agriculture, transport food storage, and anti aircraft defence and it could not be satisfactorily solved by a mere branch of one public department like the new Food Plans Department of the Board of Trade If coördination was needed for the fighting services it was needed no less in the measures of passive defence

Sir Arthur Salter said he would like to see dispersed inland storage of essential foodstuffs equivalent to a year s consumption of wheat He said equivalent because the whole of the storage need not be in actual wheat itself The supply could be worked up gradually starting with six months and working up until it reached a year s stock. This plan he claimed, would enable us if we had a long war, to fight that war for several years undisturbed by the terrible prospect of imminent starvation

Sir T Inskip Minister for the Coördination of Defence promised that the questions as to plans for passive air-raid precautions raised by Sir A. Sinclair would be noted and examined. They were all aware of the menace from the air and a great deal of work had been done in connexion with that. The fact that discussions had taken place about the financial responsibility indicated that the Government s plans had reached a very advanced stage The whole country had been surveyed and divided into certain zones. When the discussions on financial responsibility had ended, and a proper settlement had been arrived at the plans could be carried into active execution With regard to food storage the Government had had the assistance of one of their greatest public servants on this question for months He had reviewed the position in all the detail necessary to enable the Government to come to a decision It was not an easy question and the proposals had not been either rejected or accepted at present by the Government The Government were aware of the advantages The cost was not a negligible item There was no opposition from the Services to food storage indeed they would heartily welcome it The House might be assured that it would be fully informed of the Government s decision on the matter

After further debate the motion to reduce the Minister s salary was negatived

FACTORIES BILL

In the House of Commons on July 27th the Lords amendments to the Factories Bill were considered

Mr Lloyd Under-Secretary Home Office moved that the House should agree with the amendment on a new clause extending the period of employment for young persons from 6 P M to 7 P.M. providing that the total hours worked did not exceed 44 in any week and that a half-day's holiday, in addition to Saturday was given He said that the alteration had been suggested by certain persons interested in education. It was designed to facilitate arrangements being made for a half-day s holiday instead of by cutting down the hours each day in certain cases The suggestion had been approved by the Board of Education —Mr R J Davies and Viscountess Astor expressed great disappointment at the alteration made by the amendment in the Bill. In the subsequent debate it was urged on the Government by Opposition members that there were no grounds—physical, educational or social—on which the change could be justified.—Captain Margesson Parliamentary Secretary to the Treasury finally suggested that the Government should be given an opportunity of further considering the matter and a motion that the debate should be adjourned was agreed to

On the following day July 28th, the debate was resumed and Mr Lloyd announced that the Government had carefully considered the proposal and in view of the opinions expressed on the previous night they did not propose to press the amendment (Cheers)—The House decided to disagree with the Lords amendment and on further consideration the Lords decided not to press it.—The remaining Lords amendments to the Bill were agreed to

HEALTH SERVICES IN SCOTLAND

The House of Commons on July 22nd went into Committee of Supply on the Civil Estimates.

On a vote of £2,348,501 to complete the sum necessary for the salaries and expenses of the Department of Health in Scotland.

Mr Elliot Secretary of State for Scotland announced a recent valuable agreement with the building industry in Scotland which should have far reaching effect in housing progress because it provided machinery for the expansion of personnel and also afforded a ready means of discussing difficulties of organisation which might from time to time hamper progress It began by recognising the fact that the present problem of housing in Scotland was urgent and they were trying to stimulate a greater growth of housing activities following the report on rural housing A circular which had just been issued to all county councils recommended a more adequate inspection of rural houses and special surveys of houses for farm servants and crofters The Circular also dealt with the demolition of unfit houses with the improvement of defective houses, a new use of the Housing (Rural Workers) Acts and the planning design and lay-out of new houses They were taking emergency measures to deal with certain difficulties and the Commissioner for the Special Areas felt certain of a sufficient degree of support from the local authorities to justify the promotion of a Special Housing Association. In the first half of the year—the worst half—the number of houses actually completed was now 5073 For those yet to be completed in 1937 the estimate—he gave the figures with the utmost reserve—was 11 267 If this was realised there would be, with those built by private enterprise, a total of some 25,000 houses of five apartments or less—i e , those wanted to deal with the present situation That, roughly speaking, was similar to the number completed in the last five years It was possible that things might get worse before they got better, for they could all see a shortage of labour coming owing to industrial activities, but the whole of his administration was doing its utmost to forward the rehousing of Scotland at an early a date as possible

Mr LEONARD said that in the Department's Report there was a reference to home visitation and child welfare schemes in which it was stated that the chief purpose of the visits was to enable the house visitor to advise the mother in matters affecting her own health, individual care, domestic hygiene and home management There was no reason why they should spend money in doing this when the person who had to manage the home and do the work was not capable of doing it Therefore he asked what was being done to urge local authorities to prepare for the supply of domestic helps in order to attend working-class homes, especially in view of the fact that the personnel of midwives in the future would be different from what it had been in the past, when they were able to give domestic help in addition to their other technical qualifications He also asked the Department to pay attention through their inspectors to the question of maternity homes Under the Maternity Homes Act it was possible for a maternity home to have only one qualified person, who might be the superintendent, herself He was now informed that the total number of maternity homes registered by local authorities in February, 1937, was 146 and the total number of nurses employed in the homes was 747 The number of nurses who neither had the Central Midwives Board qualification, nor were registered in the general part of the register of nurses, were 107 If there was not a proper proportion of qualified nurses he hoped the Department would take the matter up and endeavour to rectify it

Captain W T SHAW said that if the standard of health was to be maintained in Dundee and the small burghs of his constituency something should be done in the near future to restrict the uncontrolled importation of jute from Calcutta which was cutting into the employment of that district

Mr MALCOLM MACMILLAN said that no praise was too high for the doctors and nurses of the Highlands and Islands Medical Service One of their great difficulties was transport, and this had a very definite bearing on the health of the communities in these areas He described the great difficulties that doctors and nurses had in reaching their destination and there were cases where patients had had to be carried from the far end of Harris, sometimes across hills, down to the roads, if they could be so called, leading to Stornoway in order to reach the only hospitals that had proper equipment and accommodation The question of roads could not be over-emphasised Another development which would greatly assist the medical services would be the extension and improvement of the telephone services in the Islands Another question that was fundamental to sanitation was that of the water supply, for there were rural areas that could not raise sufficient money locally to pay for a proper supply

THE UNDER SECRETARY'S REPLY

After further debate, Mr WEDDERBURN said that if they compared the present rate of slum clearance with that for any year previous to 1933, it was exceedingly satisfactory, but if they compared it with the needs of their country it was not at all satisfactory, because it was not sufficient to remove slums let alone overcrowding, within a reasonable period of time When they began their slum clearance campaign in 1933 it was hoped that both in England and in Scotland slums would all be removed in five years Since then they had removed 43,000 slums in Scotland, a rate five or six times as high than anything ever done before The Department of Health had estimated that there were probably still another 50,000 houses yet to be removed, and they were now half way through 1937 He was speaking of slums alone, apart from overcrowding They certainly would not remove them by the end of 1938, and whether they would remove them in another five years after that depended on the additional provisions for increasing the supply of labour which they were able to make now Everybody concerned in the production of houses should reflect that while the present delays continued thousands of people in Scotland had to go on living in conditions of the most hideous squalor from which they could not escape He was confident that if those engaged in the building trade, the local authorities, and the Department of Health bore that in mind they would be able to raise the rate of production to the height necessary to fulfil the needs of the country

A motion to reduce the vote was negatived

NOTES ON CURRENT TOPICS

Health of Post Office Workers

The Consolidated Fund (Appropriation) Bill was read a third time and passed in the House of Commons on July 29th Major TRYON, Postmaster General, said his department were giving special attention to better welfare accommodation and such things as staff refreshment rooms for Post Office employees In 1936 the rate of sickness among men in Post Office employment was the lowest since 1914 and the sickness among women was the lowest since 1906 While he agreed as to the importance of reducing overtime there did not seem to be any good foundation for suggesting that overtime had led to sickness in view of the fact that sickness had not been so low for a very long time past

On July 26th in the House of Commons the Liverpool United Hospital Bill was read the third time and passed The Lords amendments to the Coal Mines (Employment of Boys) Bill were agreed to

In the House of Commons on July 27th Mr GUY presented a petition, signed by a million persons, praying that the qualifying age for contributory pensions for spinsters should be lowered from 65 to 55

In the House of Commons on July 28th the Lords amendments to the Local Government Superannuation Bill were agreed to On July 29th the Lords amendments to the Agriculture Bill and the Local Government Superannuation (Scotland) Bill were considered and agreed to

In the House of Lords on July 30th the Royal assent was given to the Finance Act the Factories Act, the Local Government Superannuation (Scotland) Act, the Agriculture Act, the Matrimonial Causes Act, the Cinematograph Films Act, the Coal Mines (Employment of Boys) Act, the Local Government Superannuation Act, the Milk (Amendment) Act the Royal Samaritan Hospital for Women Glasgow Order Confirmation Act, the Ministry of Health Provisional Order Confirmation (South East Essex Joint Hospital District) Act, and the Liverpool United Hospital Act

QUESTION TIME

MONDAY, JULY 26TH

Remarks by Coroners

Sir ARNOLD WILSON asked the Home Secretary whether, in anticipating legislation to give effect to the recommendations of the Departmental Committee on Coroners, he would consider issuing a circular drawing their attention to the undesirability of prejudicing the rights of third parties in other courts by expressing opinions on the responsibility or otherwise of employers in relation to fatal accidents —Sir SAMUEL HOARE replied I thought that coroners generally were familiar with the Committee's report and were aware of the Committee s observations He knew of no reason for making that particular point the subject of a special circular

Experiments on Animals

Mr GROVES asked the Home Secretary if any licensees under the Act 39 and 40 Vict cap 77 had been reported by the inspector as contravening the terms of their respective licences at any time during 1937; and if so what was the nature of such irregularities at which registered places they occurred and on what dates —Sir SAMUEL HOARE replied that three irregularities had been reported by the inspectors during 1937 In one case a licensee holding a certificate B had performed several experiments in excess of the number authorised in two others licensees holding certificates B had performed operations in one case removal of the pituitary gland and in the other partial splenectomy not authorised by their certificates Each of these had been reviewed and it was decided that the circumstances were not such as to call for proceedings against those responsible It would be contrary to the established practice to disclose the registered places where the irregularities took place

TUESDAY JULY 27TH

Pasteurised Milk in Scotland

Sir THOMAS MOORE asked the Secretary of State for Scotland whether his attention had been called to the report issued by the milk production department of the West of Scotland Agricultural College with regard to the deleterious effect of pasteurising milk; and what proportion of the milk used in connexion with the milk *in-schools* scheme under his department was pasteurised and fresh respectively —Mr *ELLIOT replied:* I have seen the report in question which relates to an experiment into the relative value of raw and pasteurised milk in calf feeding I should point out that the results of any single experiment have to be taken in conjunction with a great number of other experiments on this subject which have been and are being made As regards the second part of the question 53 per cent of the milk used in connexion with the milk in schools scheme in Scotland is pasteurised and 47 per cent untreated A large proportion of the milk in both categories is tuberculin tested

Ex Service Men and Surgical Boots

Sir DOUGLAS THOMSON asked the Minister of Pensions whether the new contract for the supply of surgical boots to disabled ex-Service men replacing the contract recently held by an Aberdeen firm called for boots hand made throughout as had been hitherto supplied —Mr H RAMSBOTHAM replied The new contract follows the form in use over the whole Kingdom with the single exception of North Ireland It provides for "bespoke hand sewn" boots throughout except that the soles may be machine stitched and the heels attached *mechanically*

Meals at Instruction Centres

Mr GEORGE HALL asked the Minister of Labour whether he had now considered the report of the National Advisory Council for Juvenile Employment for England and Wales on the provision of meals for juveniles in attendance at junior instruction centres and what steps he proposed to take to give effect to the recommendations of the committee —Mr ERNEST BROWN replied I have decided to adopt these recommendations and propose to take the necessary steps to give legislative effect to them at the earliest opportunity

Milk Bars

Mr ROSTRON DUCKWORTH asked the Minister of Agriculture whether investigations were being made to ascertain whether milk bars were patronised mainly by adults or juveniles.—Mr RAMSBOTHAM replied The Minister is not aware of any investigations into this matter but it is understood from the Milk Marketing Board that in general milk bars are patronised mainly by adults

Blind Persons Bill

Mr GEORGE GRIFFITHS asked the Minister of Health when the Bill to reduce the age limit for the award to blind persons was going to be submitted —Mr BERNAYS replied: My right hon friend regrets that it has not been found possible to introduce this Bill during the present session, but he is hoping to arrange for its introduction early next session

WEDNESDAY JULY 28TH

School children and Road Safety

Mr LENNOX BOYD asked the Minister of Transport what steps were being taken to safeguard children who had to cross main roads to reach their schools and whether he had considered the provision of subways or bridges in these circumstances.—Mr BURGIN replied: A portable Stop Children Crossing " sign has been authorised and by its use many school authorities were implementing the recommendations of the Committees on Road Safety among School-children The attention of local authorities generally has been drawn to the valuable recommendations made by those committees as to safeguarding children at road crossings and for their instruction in road safety In a few cases subways or bridges have been provided or are being provided and I am glad to have this opportunity of assuring all concerned that I shall continue to give sympathetic consideration to applications from highway authorities for grants towards such works in appropriate cases

Health of Naval Artificers

Sir ROBERT YOUNG asked the First Lord of the Admiralty whether he was aware that at *Seletar base the* engine room artificers were compelled to live under very unhealthy conditions that the messes were beneath the dock wall infested by mosquitoes the ventilation bad practically no ventilation was allowed in the non living ships and as a consequence the men of the engine room department had to work below under abnormal conditions with stale air and whether if these conditions were temporarily necessary he could arrange that hard lying money be paid while these conditions exist —Mr DUFF COOPER replied I am causing special inquiries to be made into conditions at Seletar and I *will inform the* hon Member *of the result as soon as* possible

Exchequer Grants for Rural Housing

Sir PERCY HURD asked the Minister of Health how many rural district councils in England and Wales had made application to the Rural Housing Committee for Exchequer grants in respect of new housing accommodation required *for the* abatement of overcrowding among the agricultural population under the terms of Section 108 of the Housing Act 1936; and the number and amounts of the grants approved by him under that section up to *the end of* June 1937 —*Sir* KINGSLEY WOOD replied: Applications have been received from 61 rural district councils and up to the 30th June applications from 52 councils covering 1117 houses had been considered by the Rural Housing Committee On the recommendation of the Committee I have undertaken to make *the following Exchequer* contributions, payable annually for 40 years in respect of each house —

Houses	*Contribution per house*
3	£2 10 0
90	£5 0 0
9	£5 10 0
3	£6 0 0
33	£7 0 0
12	£7 10 0
673	£8 0 0
841	
43 under consideration in the Department	
232 Committee have deferred their final recommendation until tenders have been obtained.	
1117	

Birth Registration

Sir ROBERT TASKER asked the Minister of Health if he was aware that the Registrar General of Births had effected an amendment of an entry of birth under reference 5263 R 37 of his department without statutory declarations from both the mother and the husband having regard to the fact that false information had necessitated the amendment of column 6 of the entry why the Registrar General had accepted the particulars in column 4 without corroborative testimony from the informant and whether he would take steps to call for medical and other evidence to ascertain the correctness or otherwise of the particulars given in column 4 of the entry —Sir KINGSLEY WOOD replied The Registrar General has no power to authorise the correction of an error of fact in a birth register except upon statutory declarations by "two credible persons having knowledge of the truth of the case" In the case referred to the entry of the child's paternity cannot be corrected since the fact itself is in dispute between the husband and wife The mother's statement that the entry of her husband's address was incorrect was, however, supported by declarations by credible persons that the husband did not reside at the address in question, and no declaration by the husband was necessary The Registrar General accordingly authorised the correction of this particular, which is not, indeed, in dispute

Earth Closets in Northumberland and Durham

Mr DAVID ADAMS asked the Minister of Health whether he was aware that in the Northumberland and Durham mining villages there were large numbers of earth closets, far below modern standards, in districts where facilities obtained for suitable water carriage system and whether this matter had his particular attention —Sir KINGSLEY WOOD replied Yes, sir Schemes for the conversion of 25,000 closets in these counties have been entertained by the Commissioner for the Special Areas

THURSDAY, JULY 29TH

Free Meals in Secondary Schools

Mr GEORGE GRIFFITHS asked the Parliamentary Secretary to the Board of Education when information on school meals provided in secondary schools would be available and the statutory authorisation for the supply of these meals —Mr KENNETH LINDSAY replied It is hoped that the information will be available by the end of this year or early in January at the latest The power of authorities for higher education to provide free meals in secondary schools is derived from the power conferred upon them by Section 71 (c) of the Education Act, 1921, to make maintenance allowances to pupils in schools of higher education

Diphtheria Immunisation

Mr LEACH asked the Minister of Health whether he could state approximately how many boroughs county boroughs and counties had a diphtheria immunisation scheme in operation in England and Wales —Sir KINGSLEY WOOD replied I have no complete information on this subject, but I understand that some action with regard to immunisation against diphtheria is taken by the councils of approximately 74 county boroughs 117 non county boroughs, 28 metropolitan boroughs, and 5 counties in England and Wales

National Health Campaign and Mental Hygiene

Sir FRANCIS FREMANTLE asked the Minister of Health if, having regard to the vital importance of mental health to the community and the growing public interest and need of enlightenment in the subject, he would have it included in the health campaign propaganda which was to be carried out in the autumn under the auspices of the Government

Mr WHITELEY asked the Minister of Health why, in view of the importance of mental hygiene in the life of the community, this subject was not being included in the forthcoming national health campaign and public attention was not being directed to the question of mental health services —Sir KINGSLEY WOOD replied Opportunities will certainly be taken in the course of the campaign to call attention to the importance of mental as well as bodily health

Tuberculin-tested Milk

Sir EDWARD GRIGG asked the Minister of Agriculture whether he could give the House any information as to the confirmation of the tribunal which inquired into the position of producers of tuberculin tested milk when this inquiry began, when its report was submitted to him, whether that report would be published and whether the producers of tuberculin tested milk asked to be included in the Milk Marketing Scheme or pressed, on the contrary, for permission to remain outside it —Mr MORRISON replied The Tuberculin Tested Milk Producers' Association lodged certain objections to the amendments of the Milk Marketing Scheme which, with other objections, were considered last autumn at a public inquiry held by Mr N L Macaskie, K C At the conclusion of this inquiry Mr Macaskie, on my invitation, held a further public inquiry into the question whether it was desirable that I should consent to the withdrawal of the exemption of sales of tuberculin tested milk from the operation of Part VI of the Scheme This latter inquiry commenced on Dec 10th, 1936, and Mr Macaskie submitted his report on March 22nd, 1937 Following the usual practice the report will not be published As to the last part of the question, the Association asked that the exemption of sales of tuberculin tested milk should be made a permanent provision of the scheme, and if contrary to this submission, the exemption was not continued, that special provision should be made to safeguard the position of producers of tuberculin tested milk

Advertisements in Postage Stamp Books

Sir ARNOLD WILSON asked the Postmaster General whether, in view of the recent discussions of the British Medical Association at Belfast and of the recommendations of the Select Committee on Patent Medicines in 1914, he would give further consideration to the expediency of excluding advertisements of aids to hearing from postage stamp books sold by his department, and what, if any, financial loss would be occasioned thereby —Sir W WOMERSLEY, Assistant Postmaster General, replied My right hon friend has referred to reports of the recent discussions of the British Medical Association on this matter and can find in them no reason for modifying the present policy of the Post Office, which was confirmed a few months ago after careful consideration in connexion with the questions asked on the 7th December last and on the 2nd February last The financial loss from the exclusion of advertisements of aids to hearing would be upwards of £3000 a year

FRIDAY, JULY 30TH

Alleged Attacks on Red Cross Units in Spain

Mr WILFRID ROBERTS asked the Secretary of State for Foreign Affairs whether, in view of the repeated attacks upon Red Cross units in Spain, he would make it a condition of granting belligerent rights to the insurgents that the Red Cross was in future respected —Viscount CRANBORNE, Under Secretary for Foreign Affairs, replied No such attacks have been brought to my notice The second part of the question does not, therefore, arise

Silicosis and Asbestosis

Mr KELLY asked the Home Secretary the number of cases of men and women reported to the Home Office as suffering from silicosis or asbestosis during 1936 and the first six months of 1937 —Sir SAMUEL HOARE replied Cases of silicosis and asbestosis are not reportable to the Home Office as and when they occur and I do not receive returns for periods of 6 months but according to the Annual Return from the Medical Board for 1936 they certified 551 cases in that year and in addition certified 198 deaths to have been caused by one or other of these diseases

Motorists and Independent Medical Attendance

Sir JOHN MELLOR asked the Home Secretary whether he would take steps to secure that any person detained in custody upon a charge of driving a motor vehicle while under the influence of drink should as soon as the police surgeon was sent for, be informed of his right to request the attendance of a doctor of his own selection —Sir SAMUEL HOARE replied It is the practice of the Metropolitan Police to inform any person in custody on the charge in question that it is open to him to have a doctor of his own choice called, on the understanding that he will pay the doctor's fee I understand that the general practice in other police forces is similar I do not think that any special instructions are called for, but I should be happy to look into the matter further if there is any reason to think that the procedure I have indicated is not followed

OBITUARY

ERNEST GEORGE FFRENCH M.D
F.R C.S Edin. M R.C P Lond

We briefly recorded last week the career in the R.A.M.C of Dr E G Ffrench who died on July 25th in his 64th year Retiring as he did from the service in 1920 he still found opportunity to become an independent dermatologist of wide reputation.

Ffrench was holding a house appointment at Edinburgh when the South African War broke out, and it was as a civil surgeon attached to the West Riding regiment that he first saw active service. Only after taking part in the action at Rhenoster Kop did he apply for a commission in the R A.M C He was stationed for a time at Aldershot and was then sent to Jamaica to deal with an outbreak of yellow fever in the garrison following with success the methods of Sternberg in Cuba. The next few years were spent with the Royal Engineers at Chatham as a surgical specialist to the Scottish Command and as dermatologist at Madras and in the Deccan Returning to England he took charge of the Rochester row Military Hospital at a time when rapid mobilisation made this hospital of pivotal importance. He remained there until 1916 when he was sent to Dublin as dermatologist and took part in organising a hospital in the Irish Command He also equipped the hostel for war nurses in Vincent-square and during the last year of the war he was attached to various hospitals in France seeing service at Vimy Ridge Bethune and Arras and making contact with the American troops.

[Photograph by Elliott & Fry

COLONEL E. G FFRENCH

Many circumstances combined to give Ffrench an unrivalled experience with the then new remedies for syphilis At Madras in 1910 he was able to get a supply of salvarsan from Ehrlich s laboratory before it was placed on the market He saw neosalvarsan tried with success by Prof. John Fordyce at the City Hospital in New York, and experimented with it and its various substitutes being probably the first to use novarsenobillon when it was made by Poulenc Frères. Kharsivan and neokharsivan when introduced were found to give rise to severe reactions and it was Ffrench whose experience enabled him to state that they might safely be used with proper precautions. Working at Rochester row with C H Mills on cases which were proving intractable to combined treatment with salvarsan and mercury he had striking results with the French remedy hectine, a soluble benzo sulpho derivative of aminophenyl containing 21 per cent of arsenic. When commanding a general hospital in France he saw a good deal of exfoliative dermatitis occurring during arsenical treatment and found the most effective remedy in the intramuscular injection of intramine which was then being used in treating toxic jaundice The soft chancres and phagedenic ulcers so common at that time healed rapidly in Ffrench s experience under the rays of an arc between metallic electrodes. All this stood him in good stead when he collaborated with C F Marshall in the production of a text-book of syphilis and venereal diseases which gave practical teaching to practitioners in dealing with all stages of these diseases and their complications Ffrench was always averse from the routine treatment of syphilis insisting on the need to study the personal and especially the temperamental factor

After retirement from the service in July 1920 Colonel Ffrench settled in practice in Harley-street *and in the following* year was appointed chief assistant dermatologist to St Bartholomew's Hospital combining that with charge of the skin department at the National Temperance Hospital. He continued to write and investigate for some time he worked in Vienna and he was invited to contribute to an American urological review his views on modern progress in the treatment of venereal disease He had worked both at the Rockefeller Institute and at the Johns Hopkins Hospital and recently was elected an associate professor of the New York Postgraduate School.

It was on his first visit to the U S.A in 1904 that he met the famous handwriting expert D N Carvalho and married his daughter Adele, who survives him with a son and a daughter

JAMES OWENS F R C.S.I

Mr Owens surgeon to Mercer s Hospital Dublin, died after a very short illness on July 26th in his 38th year Born at Baltinglass Co Wicklow he was educated at Knockbeg College Carlow and at the schools of surgery of the Royal College of Surgeons in Ireland of which college he became a fellow at a very early age. After qualification he entered general practice in England for a short time but within a couple of years he was offered the appointment of assistant surgeon to his old hospital Mercer's Hospital Dublin. His early promise as a student was more than fulfilled and when only a few years later an unexpected vacancy on the full staff arose by the death of the late Mr R C B Maunsell the promotion of Owens was a certainty He proved himself a surgeon of unusual ability and judgment a keen student and a close clinical observer whose care of his patients did not end when they left his operating table. As a teacher he was very effective both when in his earlier days he engaged in private teaching and later when as a clinical teacher his classes, in the ward and in his out-patient department were crowded by students from all the Dublin hospitals He speedily gained the confidence of his associates and at an unusually early age he found himself with a large surgical practice His patients and his brethren alike recognised his competence and his trustworthiness He wrote little but his contributions to the Royal Academy of Medicine gave evidence of his sound critical thought and of his frankness.

The death of James Owens writes a colleague has come so suddenly and unexpectedly that it is impossible as yet to marshal one s thoughts or to attempt to estimate the loss to Irish surgery and to his hospital that his death entails. His ability as such has been widely recognised and few men so young have so impressed a large circle Those who once sought his aid as a consultant and operator sought it again and again, and came to rely more and more on his judgment as well as on his technical skill He loved his work and he loved the technique of it, but this love never led him to perform an operation of the necessity of which he was not thoroughly convinced I have known few surgeons—and no other young surgeon—of so sound clinical judgment His hospital colleagues came to rely on him more and more as they knew him better He was much more than a 'brilliant operator' His care before operation and his after care were as careful as his operative technique He took a personal interest in his patients which made him not only trusted but beloved, and by his students he was held in equal esteem"

MARTIN HERBERT OLDERSHAW, M D Lond, F R C S Eng

Mr Martin Oldershaw, who died on August 2nd, was born in London in 1891, the son of H A Oldershaw He was a delicate boy and his youth was spent by the sea But he attended the Brighton Grammar School and entered University College, where he took the Bucknill scholarship in 1913 Qualifying M B, B S Lond in 1917 he went on to take the gold medal at the M.D in 1919 and the F R C S Eng in the same year At University College Hospital he filled a series of resident appointments, ending with that of Holiday surgical registrar and casualty surgeon, and after further experience at the Lewisham hospital he was elected to the staff of the Hospital for Women, Soho square, and limited his interest to gynæcological work. Amongst other appointments he was consultant to the L C C and to the St Pancras Borough Council in obstetrics and gynæcology, latterly he had accepted advisory posts at the British Red Cross Society's clinic and the St John's clinic at Pimlico He was a diligent attender of meetings where gynæcological practice was discussed, and made useful contributions himself on such things as the significance of bleeding and the choice of treatment in cancer of the uterus For some years he was the diligent secretary of the Hunterian Society

A colleague writes

"The tragic death of Mr Martin Oldershaw at the early age of 46 severs a close friendship of over 23 years He was a valued member of the staff of the Soho Hospital, and worked untiringly for its welfare He was an able diagnostician, his opinion being constantly sought in difficult cases About his operating there was nothing spectacular, but invariably the task on hand was done with care and precision. In committee work he was indefatigable, and I cannot remember him not attending if it was humanly possible Outside his gynæcological work his activities were numerous and varied As an examiner upon public bodies he was popular and many hundreds of examinees at the Central Midwives Board and the General Nursing Council will remember his kind and considerate manner He was a keen freemason, and his work for the Hunterian Society will be recalled In private life he had an attractive personality, he was one who could always be relied on. His chief hobby was fishing, and he was never happier than when he was discussing the good times he had with the rod. Essentially he was a family man, and the deepest sympathy will go out to his widow and a son of 7"

MEDICAL NEWS

University of Cambridge

On July 30th the following degrees were conferred

M.D—*J D Procter and W B A. Lewis

M B B Chir—*E M Evans *Patrick Kidd *C R. Morison *G O Richardson, *G M Fleming *C D Anderson, *H A. Brook *T P H McKelvey *E F Aubert, *I A. Guest *P F Barwood, *J O Collin *W H Ekin, *M T Parker and *E A. Pask J F H Bulman R O B Barbor, F S Cosh, E B French Harry Haigh J P Reidy W B Waterfall R C S Dick, C J S Sergel R W Watts, J P Singer C T A Burgess J N Fell J C Gilson, E A G Goldie C E D H Goodhart, J N Horne R W Markham, J H Moir A K Pardhy K M M Sheldon, H R Wynne, I G Braddon A. C Cunliffe, W G Murray Browne, R C Neville, Michael Feiwel, C M Dickins T P Myles C G Scorer P H Willcox, R. F Ashwin Richmond Edwards and N F Coghill

* By proxy

The E G Fearnsides scholarship has been awarded to Dr A M Barry of Pembroke College

University of London

At recent examinations the following candidates were successful —

M D

Branch I (Medicine)—E G H Cowen Constance E Field G W Hayward A G Hounslow and *Archibald Nelson Jones

Branch II (Pathology)—J L Hamilton Paterson and *H A Magnus

Branch IV (Midwifery and Diseases of Women)—V H J Davies Rees Evans *John Howkins and S P Mason

* University medal

FINAL EXAMINATION FOR THE DEGREE OF B D.S

Group II—Frank McCombie

A Memorial to Miss E M Pennefather

To commemorate the social service work done in Kensington by the late Miss E M Pennefather, it is intended to found a cot which will be named after her in the Princess Louise Hospital for Children, Kensington Miss Pennefather was chairman of the house committee and a member of the board of management of the hospital from its beginning until her death

Scottish Conjoint Board

At recent examinations of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates were successful —

F E Adams Erwin Adler G R Altmann John Anderson Max Berg, Dietrich Blos L A P Cantin, Walter Carsten J P Chapin K C Chee L G Cruickshank Arthur Dzialoszynski, Herman Felsen, Paul Fleischmann Ernst Friedmann A M Gall D L Goldman D L C Greig I M Greenberger, Adolf Hirsch, Paula Heimann W I S Hudleston F P Hudson, A T H A Kader A M Kallen Alfaretta F Keith, J J Kristal R R Levine H G Liebmann, K. M Little, Benno Lipschitz E W Lou Hing D M Macdonald J M Mervis, Cecily C Mitchell, J R Moffat M J Munro M K. Naidu Beryl A Peters Ernst Rachwalsky, H L Riner W A Rock, R. W Ross Murray Rubin Louis Schaffer, I H L Shiefstein Solomon Siegel Charlotte B Sommer Betty Spier F B Stephenson W H Suffield W S Thomson S P Vosnides and Edward Weltman

Research Fellowships in Tropical Medicine

The Medical Research Council have awarded the following research fellowships in tropical medicine, which are tenable for three years —

Senior Fellowship—Frank Hawking D M Oxon, D T.M Liverp assistant lecturer in pharmacology Welsh National School of Medicine Cardiff

Junior Fellowships—David Alexander Cannon B.Sc., M.B Glasg John Leslie Dales M B Sheff, assistant pathologist Royal Hospital Sheffield and Ian Wilson MacKichan, M.B Camb house surgeon London Hospital

Dr Hawking will work in Africa on the chemotherapeutic treatment of sleeping sickness The junior fellows will spend their first two years in this country studying tropical medicine and the use of research methods

Queen's University, Belfast

Mr J R Wheeler has been appointed lecturer in ophthalmology, and Mr C H G Macafee and Mr H M Clure lecturers in midwifery and gynæcology

Royal College of Physicians of London

A quarterly comitia of the college was held on July 29th with Lord Dawson the president in the chair Dr S. V Sewell of Melbourne attended as a distinguished guest The following were elected officers for the ensuing year :—

Censors Dr Gordon Holmes Sir Maurice Cassidy Dr Albert Ramsbottom, and Dr George Beaumont Treasurer Dr Sidney Phillips Registrar Sir Raymond Crawfurd. Harveian Librarian Dr Arnold Chaplin Assistant Registrar. Dr Charles Newman Library Committee Dr J J Conybeare, Dr Adolphe Abrahams Dr Reginald Hilton and Dr Newman Curators of the Museum Dr R. A. Hickling Dr D T Davies Dr W Russell Brain, and Dr E C Warner Finance Committee : Prof. E S Langmead Dr J P Hedley and Dr Anthony Feiling

The following were elected examiners :—

Physics : Mr J E Facer and Mr W B Tuck Chemistry Mr J H Brinkworth and Mr Gilbert Stead Materia Medica and Pharmacology Dr Philip Hamill, Prof E J Wayne, Dr Clifford Hoyle Dr J W de W Gray Thornton and Prof. W J Dilling Physiology Prof C. A Lovatt Evans F R.S and Prof B A McSwiney Anatomy Prof R D Lockhart Pathology Dr Geoffrey Bourne, Dr F J Nattrass Prof Geoffrey Hadfield, and Dr P N Panton Medical Anatomy and Principles and Practice of Medicine Prof. G W Watson Dr George Graham Dr Feiling Dr C M Wilson, Dr G E S Ward Prof W H Wynn, Prof F E Tylecote, Dr R A Rowlands, Dr J A Drake, Dr Arnold Stott Dr Geoffrey Marshall, and Dr J Forest Smith Midwifery and Diseases peculiar to Women, Prof Gilbert Strachan Prof A Leyland Robinson, Mr D W Roy Mr Leslie Williams, and Mr F W Roques Public Health Part I, Dr J M Hamill, Part II Dr C T Maitland Tropical Medicine Prof. J Gordon Thomson and Lieut.-Colonel G S Parkinson Ophthalmic Medicine and Surgery Dr F M R Walshe Psychological Medicine Part I, Dr Henry Yellowlees Part II Dr Douglas McAlpine and Dr G W B James Laryngology and Otology : Mr V E Negus. Radiology Prof Sidney Russ and Dr Russell J Reynolds Anaesthetics Dr C W Morris Child Health : Prof Leonard Parsons Murchison Scholarship (1935) Dr Hilton and Dr K. Shirley Smith

The Baly gold medal was awarded to Prof E L Kennaway F.R.S for his biochemical investigations which have led to the identification of a group of substances provoking malignant growth of tissues and having significant relations in structure to certain hormones and vitamins Sir Edward Mellanby F R S was appointed Harveian orator for 1938 The Murchison scholarship was awarded by the University of Edinburgh to Dr James Innes. The following were appointed representatives of the college Sir Humphry Rolleston on the executive committee of the Imperial Cancer Research Fund ; Dr Edwin Bramwell on the council of King's College Newcastle upon Tyne Lieut.-Colonel Hugh Stott at the celebration of the 50th anniversary of the foundation of the University of Allahabad on Nov 16th ; Prof F R Fraser and Colonel A. H Proctor at the International Congress for Medical Post-graduate Study in Berlin from August 21st to 24th Dr W S C Copeman at the centenary of the Royal Medical Society of Budapest from Oct 6th to 8th ; and Lord Horder at the International Cremation Congress London, from Sept 24th to Oct 2nd Sir Arthur Hurst will deliver the Harveian oration on Oct 18th at 4 P.M

The following candidates having satisfied the Censors Board were admitted to the membership of the college —

Saul Adler M B Leeds N S Alcock, M B Edin D S Bateman M B Oxon William Brander M D Aberd. Beatrice A Butterworth, L R C P Lond. ; E M Buzzard M.B Oxon J V Cable, M D N.Z L I M Castleden, M D Lond , M O. Chapman M B Oxon E M Darmady B Chir Camb P C Dhanda M B Punjab ; David Diamond, L R C.P Lond , P G Dowling M B Melb Mahmoud Erian M.D Cairo Doreen P Firmin, M.B Camb W H Gabb M.B Camb A R Gilchrist, M D Edin ; Y H Guinena, M D Cairo , Christopher Hardwick, M.B Camb F D Hart M.B Edin , H T Howat M.B St. And Martin Hynes, M B Camb W H Kauntze M.D Vict. ; W A S. Lamborn, L R C P Lond L J M Laurent M B Lond. David Levine L R C P Lond C A Lillicrap M.B Lond ; J F Loutit M.B Oxon Francis McLagan, M B St And. ; W M Macleod, M B Lond. P T Madhavi Amma M.B Madras Archibald Nelson Jones, M D Lond Ananda Nimalasuria, L R C.P Lond B I Niyogi M B Calcutta ; J R Owen L R C.P Lond J E Paterson, M B Camb E E Pochin, M B. Camb J D Ramsay M.B Glasg W R. Russell M D Edin J C Saldanha M B Lond O A Savage L.R.C P Lond J F Sewell M D Melb S C Shore L R.C.P Lond Thomas Simpson M B Leeds A J M Sinclair M D Melb D W G Smith M.B Edin ; W M Smithers M D Melb. Bealy Thorne Thorne M B Camb ; G L B Thurston, L.R.C.P Lond W R Trotter M B Oxon , J W A Turner M.B Oxon ; R F West M B. Adelaide and Norman Whittaker L.R.C P Lond

Licences were granted to the following candidates who have passed the final examination of the Conjoint Board —

B S S Acharya St Bart's Iris A Acton, King's Coll O B Alakija, Guy's A. L. Alban Univ Coll H R Alban Charing Cross, M Albert Univ Coll Mary J Allardice, King's Coll ; E L Allen, St. Bart's, Sheila M Anderson Roy Free C E Aston, Univ Coll E. A Atkinson Lond. J O Babbage and E B Bagshaw Manch , J K. Baker, Camb and Middlesex , Mary Baker Roy Free T E Barlow Manch V N le P T Barlow St Thos. Mary E Barnard, Camb and Manch Alice J M T Barnes Oxon and Univ Coll. Laura M. Bates Roy Free Eileen M Bateson Leeds , G K. Beatty St. Thos. , G H H Benham Manch ; B D Berger Lond R D D Birdwood A. B Birt and H J Bliss St Thos L B Blomfield Guy's R. Bloom Cardiff T K. Bradford, King's Coll Katharine M H Branson Roy Free J K. Bremer Cape Town H A. Brook, Camb and Univ Coll. G R. H Brown, Lond , D W Browne, Middlesex J C M Browne Univ Coll , Marjorie G, Bryan Cardiff , C T A Burgess, Camb and Liverp N J Burnand Guy's ; J H Burniston, St Mary's H S Bury, King's Coll. L H Cane, Camb and St. Bart's D W J Cohen King's Coll L Cohen Manch and West Lond , A L Collins Westminster J Colover Univ Coll , J Comyn and Margaret M J Conway King's Coll F S Cosh Camb and Lond W W Cowen Lond. D I Crowther, Oxon and St Bart's A. C. Cunliffe Camb and St. George's A G Dabbs, Guy's , A David Cardiff and St. George's , J B David Liverp T I David and L P Davies, St Thos. H J L Dickinson Oxon and Lond. L Donald, St Thos P W Edmondson, King's Coll G F Edwards, Charing Cross Phyllis M Edwards, King's Coll. R. W Ellis and R. E. Emmott, Leeds , D T H Evans, Liverp ; E M Evans Camb and Middlesex T J Fairbank Camb and St. Thos Ivy F Fallon Liverp E L Fawssett Middlesex W H V D Ferdinands, Ceylon , A R. Ford St. Bart's R. G D Forward Camb and Lond W B Foster, St Bart's Margaret B Fox, Roy Free D L V Fraser Guy's Constance M Frazer, Liverp W K. S Friedburg St Bart's E Gartside, Manch C H George St Mary's Rachel Goldenberg Roy Free J Graham Westminster M P Graham Charing Cross ; W R Grant Camb and St. Bart's W P Greening, Charing Cross ; L Griffiths St Thos , T E Griffiths Univ Coll. O Gunnery King's Coll H L T J Hardwick Charing Cross , W Harris St. Thos R J Harrison, St. Bart's C C Harvey King's Coll S Hazra, Calcutta and West Lond S. R T Headley St. George's R P Hendry Camb and Liverp , L H Henein St George's F G Hibbert Manch H G, W Hoare Camb. and St George's , A Homayoun St Bart's J H S Hopkin , St. Mary's W M L Horner St Bart's T P Howkins Birm ; E B C. Hughes Univ Coll K. Inamulla West Lond G S Irvine Univ Coll R C Jackson Guy's I Jacobson, Cape Town , S H Janikoun Univ Coll. ; C T Jones Cardiff T S. Jones Liverp , J Jordan and G J G King Camb and St. Thos G M Komrower Manch M Krone Middlesex R E. Lander Charing Cross and Roy So Hants A D Le Vay Univ Coll C Levy Leeds Armorel J Lewis, Cardiff A W Lipmann Kessel St. Mary's O P Llewellyn Camb and Guy's W A Lombard Guy's G Lorriman Durh P D Lynch W rand and Guy's L McAskie, St Bart's D H Mackay Guy's K. R Mackenzie, McGill and St. Bart's R. R McSwiney St. Thos. S A Maddocks, Middlesex , E B Martin Lond T K Maurice, Camb and St Mary's, B N Mazumdar Middlesex P S Meyrick Camb and Univ Coll. , J R. Miles Guy's ; A Miller, Lond C N Mills Guy's B D Molesworth, Camb and Lond. E. H Moore, Liverp C A Moynihan, Westminster , Perin K Mullaferoze Bombay Mary G Murphy Univ Coll , R. B Niven, Oxon and King's Coll J H F Norbury, St Thos J R Odell Middlesex A K Pardhy Camb and Birm W B Parker Guy's T Partington St. George's G R Peberdy, Durh G G Phipps, St Bart's T D Pilcher St Thos J C Prestwich Oxon and St Bart's D G Price, Guy's G Quayle St George's , E P Quibell Camb and St. Bart.'s Lilian M N Raftery Roy Free B K Rank Melb H M Rapport Cardiff D C S Rendall St Bart's, S R. Reynolds Camb and Charing Cross, W N Riley Leeds, C G Rob, Camb and St. Thos I F Rose Oxon and St Bart's ; D Rubin, Camb and King's Coll W R Russell Guy's , C. P Sames, St. Mary's H S Samuel Middlesex S. Samuels, Lond P J Schultze Glasg , K. B Scott St Bart's C E Shafto, Durh R Shaw St Mary's, K M M Sheldon, Camb and Lond J Skirrow Leeds and Lond A. F Smith Oxon. and Lond I Smith Leeds R M Solomon Camb and St Mary's, H Spencer St Mary's J H Sproule Ceylon R H Spurrier and C M Squire St. Mary's Margaret G S Stalker King's Coll Shelagh M Streatfeild, Roy Free ; A S Syed Bombay K G Symonds Cardiff , J E Talbot St Mary's N G G Talbot King's Coll. J H Taylor Lond R W Thomason Birm W G Tillmann C R Tilly and J A F Tobin Guy's Dorothy C R Vethavanam Madras , D M Wallace Univ Coll F Walt, Cape and Guy's , W B Waterfall Camb and Lond J Watkins Pitchford St Thos C. Weston, Oxon and St Bart's A B White and G D Wild Manch P B S Willan Charing Cross C. B I Willey Oxon and Lond. G P Williams, Westminster J M G Wilson Camb and Univ Coll ; W Windsor Lond P N Witney, Camb and St. Thos G H Wooler Camb and Lond ; A W Woolley Brist and Ruth F Wordsworth West Lond

The following diplomas were conferred jointly with the Royal College of Surgeons upon the following candidates —

D.A.—G E P Meldon and H D Merrington

D.O.M.S.—K M Ali T M J Armstrong H J A Barnard D L Charters H R Cursetji, G S Flynn P R Greeves K C L Houlton D Hugo M T Ismail H Jamieson J R

Kellett M A M Labib Josephine M MacFarlane T L McLarty V B Mankad I V Oza C R Palfreyman, Y C Pandit, M J Philip E V W Pockley P Ramchander, F J Rutter M K Sathe F G Scoles E S Shalom, and C A Stanley

D T M & H—P D Bhargava, A Caralasingham S N Chelliah, N Constantoulis J De E L W De Silva, S B Dhru A A El Moslimany Annie Foner M V Hargett E H Hudson P W Hutton X Khokhongkha L N Liang G D McLean E C Savona M Seraj ul Haque, S B S Smith J N Strauss J R de V Toussaint and J White

D M R—J A G F Rose and J E Swyer

Diplomas in anæsthetics, public health, laryngology and otology, and psychological medicine were also conferred on the candidates named at the meetings of the Royal College of Surgeons reported in *The Lancet*, June 19th, p 1497, and July 17th, p 168

Royal College of Surgeons of England

An ordinary meeting of the council of the College was held on July 29th with Sir Cuthbert Wallace, the president, in the chair The Hallett prize was presented to Dr A. J Innes Dr W d'A Maycock and Mr T Stewart Heslop were reappointed Leverhulme scholars Sir Holburt Waring was appointed as the representative of the College on the Newcastle Council of the University of Durham Permission was given for the annual meeting of the Association of Surgeons to be held in the College on May 5th, 6th, and 7th The following hospitals were recognised for the six months' surgical practice required of candidates for the final examination for the fellowship

Derbyshire Royal Infirmary Miller Hospital Greenwich, Woolwich War Memorial Hospital *Grimsby and District Hospital, *Warneford Leamington, and S Warwickshire Hospital *Northampton General Hospital and *Cornelia and East Dorset Hospital Poole

* Temporary recognition until July 31st 1938

Diplomas of membership were granted to the candidates named in the report of the Royal College of Physicians as recipients of the L R C P (except W B Foster and A. W Woolley)

Diplomas in tropical medicine and hygiene, ophthalmic medicine and surgery, medical radiology, and anæsthetics were also conferred jointly with the Royal College of Physicians on the candidates named in its report

La semaine médicale internationale

The third international medical week organised by the *Schweizerische Medizinische Wochenschrift* will be held from August 29th to Sept 4th at Interlaken The subjects to be discussed include problems of general biology, neurology, and carbohydrate metabolism On Sept 2nd the members of the course are invited to attend a series of demonstrations arranged by the medical faculty of the University of Berne Among those who will attend the congress are Prof Hugh Cairns (London), Prof H Spemann (Freiburg im Breisgau), and Prof O Loewi (Graz) A detailed programme may be had from the secretary of the meeting, Klosterberg 27 Basel, Switzerland

Scottish Health Education Campaign

A conference of representatives of Scottish local authorities was held in Edinburgh on July 29th at which Mr Scrymgeour Wedderburn, parliamentary under secretary of State, outlined the proposals for a health education campaign in Scotland during the coming autumn and winter He explained that the Prime Minister was to inaugurate a national campaign at a conference to be held in London on Sept 30th. The plan of the campaign to be followed in England was to enlist at the outset the public interest in the health services generally and thereafter to concentrate month by month on giving publicity to the various individual services It was proposed that the campaign in Scotland should take rather a different line and aim not only at urging the fuller use of the existing services but also at encouraging the maximum development of those services within the framework of existing legislation During the autumn months it was proposed to give full publicity to the Scottish health services There would then be a preparatory stage during the winter and spring leading up to a further intensive effort in the summer of 1938 associated with the Empire Exhibition in Glasgow

A petition for the grant of a charter of incorporation to the London (Royal Free Hospital) School of Medicine for Women has been referred to the Privy Council

Congress of Plastic Surgery

The second European Congress of Structive (Plastic) Surgery will be held at the house of the Royal Society of Medicine, 1, Wimpole street, London, W, on Oct 6th and 7th under the presidency of Mr T Pomfret Kilner The subjects for discussion are free skin grafts, nasal contour restoration, and mammaplasty procedures

Bangor Isolation Hospital

On July 20th a new wing was opened at this hospital It has cost £3500 and includes six one bed wards and other rooms

Donations to London Hospitals

Last year for the first time since the financial crisis subscriptions and donations to London hospitals exceeded £1,000,000 The total was £54,754 higher than in 1935

Training of Cripples

On July 20th Lord Stanhope, president of the Board of Education, opened the Royal National Orthopædic Hospital's Training College for Cripples at Brockley Hill, Stanmore There is accommodation for 100 boys who are taught tailoring boot making, upholstery, and watch repairing To complete the work it has been necessary to raise a loan of £25,000 It is hoped in time to extend the work of the centre and also take in crippled girls

Commonwealth Fund Service Fellowships

The Commonwealth Fund of New York are offering in 1938 not more than five fellowships to men holding appointments overseas under the British Government, the Government of India, or the Government of a British dominion or colony, who wish to undertake research in the United States Candidates should not be over 35 years of age Further information may be had from the secretary, Commonwealth Fund Fellowships, 35, Portman square, London, W 1

INDEX TO "THE LANCET," VOL. I, 1937

THE Index and Title page of Vol I, 1937, which was completed with the issue of June 26th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam street, Adelphi, W C 2 Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now

Appointments

BATE J G M B Edin Resident Medical Officer at the country branch hospital of the Hospital for Sick Children Great Ormond street

CADDELL Lt Col E D, M B Dubl, Secretary General of the National Association for the Prevention of Tuberculosis

DONE JANET M M D Lond D.P H Lond Assistant Medical Officer of Health and Assistant School Medical Officer (but primarily to carry out the duties of Supervisor of Midwives) for Leicester

ELKINGTON, J ST C M D, F R C.P Lond Assistant Physician to the National Hospital, Queen square, London

HEARTH PAULINE K M B Dubl D P H Assistant Medical Officer of Health and Assistant School Medical Officer for Leicester

MCCRACKEN IAN M B *Glasg D P H Deputy County* Medical Officer for the County of London

MACKAY JANET H, M B Glasg Assistant Welfare Medical Officer for the County of Durham

MCPHERSON C A M B St And L D S Assistant Medical Officer of Health and Assistant School Medical Officer for Leicester

NEVIN SAMUEL, M D Belf M R.C.P Lond Assistant Neurologist *to King's College* Hospital

O LEARY, NORAH M B N U I D P H., Resident Assistant Medical Officer at the Cleaver Sanatorium for Children Heswall

ROGERSON C H, M D M.R.C P Lond, Medical *Director* of the Cassel Hospital for Functional Nervous Disorders Penshurst

WILLIAMSON NOBLE F A. M B Camb, F R C.S Eng Ophthalmic Surgeon to the National Hospital Queen square London.

WYNESS W J R M B Aberd Second Resident Assistant Medical Officer at Abergele Sanatorium.

Certifying Surgeons under the Factory and Workshop Acts Dr G C BROWN (Wool District, Dorset); Dr H N PRITCHETT (Tunbridge Wells District Kent) Dr H D CHRISTIE (St Pancras District, London) Dr J O McGREGOR (Holborn District, London)

Subject to confirmation.

Vacancies

For further information refer to the advertisement columns

Aberdeen Maternity Hosp—Sen R.M O and Reg £200

Aberdeen Royal Infirmary—Surg Reg £200

Adelaide Institute of Medical Science.—Neale Research Pathologist, £900

Barnsley Beckett Hosp and Dispensary—Jun. H.S £200

Bedford County Hosp—H S , at rate of £150

Birkenhead Education Committee—Asst School M O £500

Birmingham Children's Hosp—Res. Surg O £175

Birmingham City—Asst M O for Maternity and Child Welfare £500

Birmingham, Selly Oak Hosp—Res. Ear Nose, and Throat Surgeon. Also Res. Gynæcol and Obstetrician each £700

Bradford City—Asst City Pathologist £500

Bradford Royal Eye and Ear Hosp—H S £180

Brighton New Sussex Hosp for Women Windlesham-road.—Hon Surgeon

Bristol Royal Infirmary &c—Radio Diagnostician £600

Bristol Southmead Municipal General Hosp—Jun Asst. Res. M.O at rate of £200

Bristol University Preventive Medicine Department Laboratories—Asst. Clin Path £400

Cardiff King Edward VII Welsh National Memorial Association.—Asst. Res M O for South Wales Sanatorium, £200

Carlisle City—Asst. M.O for Maternity and Child Welfare, £600

Carlisle, Cumberland Infirmary—Two H S's each at rate of £150

Central London Ophthalmic Hosp Judd-street, W C—Asst. Surgeon. Pathologist, £105 Also Sen. and Jun H.S's at rate of £120 and £100 respectively

Chester City Hosp—Jun Res M O £200

Chichester West Sussex County Mental Hospital.—Third Asst M O £350

City of London Maternity Hosp City-road, E C—Registrar £25

Coventry City Isolation Hospital—Res M O., £600

Doncaster Royal Infirmary—Cas H.S at rate of £175

Dumfries Crichton Royal.—H P £200

East Ham Memorial Hosp Shrewsbury road, E—H.P at rate of £160

Erith U.D C.—Asst M O H and Asst School M O £600

French Hosp and Dispensary 172 Shaftesbury-avenue, W C—Sen and Jun R M O £120 and £100 respectively

Glasgow University—Lecturer in Pathological Biochemistry £700

Gravesend and North Kent Hosp—Jun H.S and Cas H.S £120 and £130 respectively

Hertford County Hosp—H P , at rate of £150

Hertfordshire C C—H.S for County Institution, £175

Huddersfield Royal Infirmary—H.P , at rate of £150

Hull Municipal Maternity Home and Infants' Hosp—Jun Res M.O , at rate of £100

Ipswich, East Suffolk and Ipswich Hospital—H.S. £144

Italian Hosp Queen-square, W C—Second Hon Asst Anæsthetist.

Keighley and District Victoria Hosp—Second Res. M.O at rate of £120

Kettering and District General Hosp—H P , at rate of £150

King Edward Memorial Hosp Ealing—H.S. to Spec. Depts. Also Cas. H.S., each at rate of £150

Lancashire C C—Temp Asst Tuber O 15 guineas weekly

Lancashire Mental Hospitals Board.—Two Med Supts , each £950

L.C C—Two Temporary Divisional M O's each £800

Leicester City Mental Hosp Humberstone.—Deputy Med. Supt., £800 Also Third Asst Res M O £350

Liverpool Port Sanitary Authority—Asst. Port M O , £700

Liverpool Royal Children's Hosp Myrtle street.—Med Reg £150 Also Surg Reg at rate of £150

Liverpool Sanatorium Delamere Forest, Frodsham—Sen Asst. and Jun Asst to Med Supt £350 and £225 respectively

Manchester City—Deputy Med Supt. for Abergele Sanatorium £800 Also Second Res Asst M O for Baguley Sanatorium £350

Manchester Park Hosp Davyhulme—Sen Res. M O., £350

Manchester Royal Children's Hosp , Pendlebury—Asst M O and Res. M O each at rate of £150

Manchester Royal Infirmary—Asst. M O to Massage and Electrical Dept. £100

Miller General Hosp Greenwich S E—Anæsthetist 52 guineas. Cas. O., at rate of £150 Also H.P and H.S each at rate of £100

Mount Vernon Hosp Northwood.—Asst. H.S. £150

Northampton County Borough Education Committee.—Asst. School Dentist £450

Nottingham Children's Hosp—Res. H P at rate of £150

Plymouth City General Hosp—Jun Asst M O., at rate of £250

Plymouth Prince of Wales's Hosp—Hon Aural Surgeon and Hon Med Reg H.S Also Res Anæsthetist and H.S to Spec. Depts., each at rate of £120

Portsmouth Royal Hosp—Fourth H.S , at rate of £130

Preston and County of Lancaster Royal Infirmary—Res Surg O £300

Preston, Wrightington Hosp Appley Bridge.—Jun Asst. M O., £200

Queen Charlotte's Maternity Hosp., Marylebone road N W—Registrar 20 guineas.

Rochdale Infirmary and Dispensary—H.P and Second H.S each at rate of £150

Romford, Oldchurch Hosp—Jun Res. M O £350

Rotherham Hosp—H.S for Ophth. and Ear Nose and Throat Depts., £150

Rowley Regis Borough Council.—Deputy M.O.H and Asst. School M.O , £600

Royal College of Physicians Pall Mall East S W—Milroy Lecturer

Royal Eye Hosp St. George's-circus S.E.—Sen. H.S and Two Asst. H.S.'s at rate of £150 and £100 respectively

Ryde, Royal Isle of Wight County Hospital.—Hon. Surgeon to Ear Nose and Throat Dept. Hon. Pathologist. Also Jun H.S. £120

St Albans Hill End Hosp and Clinic.—Locum Tenens M.O 7 guineas per week.

St Bartholomew's Hosp , E C—Dental H.S., at rate of £80

St. John's Hosp Lewisham S.E—Med Reg to Out-patient Dept 50 guineas

St Leonard's-on-Sea, Buchanan Hosp—Hon. Neurologist.

Sheffield Children's Hosp—H.S., £100

Southampton Children's Hosp and Dispensary for Women—Res. M O , at rate of £150

Southampton, Royal South Hants and Southampton Hosp—Cas O and Res. Anæsthetist and H.S to Ear Nose, and Throat Dept., each at rate of £150

Southend-on-Sea Infectious Diseases Hosp—Med Supt., £750

Southern Rhodesia Medical Service.—Government M O £600

Staffordshire County Council.—Res Asst. M O for Wordsley Public Assistance Institution at rate of £300

Staffordshire General Infirmary—H.S. at rate of £200 Also H.P and Cas. O at rate of £150

Stoke-on Trent Longton Hosp—H.S , at rate of £180.

Sunderland County Borough—Asst School M O £600

Sutton and Cheam Hosp—Res M O at rate of £100

Ventnor Royal National Hosp for Consumption &c—Second Asst. Res M O at rate of £200

Weir Hosp Grove-road Balham S W—Sen and Jun Res M O's, £250 and £150 respectively

West London Hosp Hammersmith-road W—Res. Anæsthetist at rate of £100

Weston-super-Mare General Hosp.—Res. H P £150

Woking and District Victoria Hosp—Res M O., £120

Worcestershire Mental Hosp., Barnsley Hall.—Second Asst M O., £350

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Northwich (Chester)

Births, Marriages, and Deaths

BIRTHS

BROMLEY.—On July 31st at Bury St. Edmunds the wife of Dr James Wilfred Bromley of a son.

EVANS.—On July 24th at Eltham the wife of Dr J D Evans of a son.

HAWKSLEY.—On July 25th at Park road N W the wife of Dr J O Hawksley of a son

RICE.—On July 25th at Norwich the wife of Dr R. A C. Rice of a son

SAMMONS.—On July 28th at Kingswood, Bristol, the wife of Dr R. A Sammons, of a son.

VAILE.—On July 25th at Chertsey the wife of Dr J D B Vaile of a son.

WHITELAW.—On July 26th at Boscombe, the wife of Dr J O G Whitelaw of a son

MARRIAGES

CLARK—JOHNSON.—On July 31st, at Staple Church Canterbury William Adam Clark M.B to Pauline Mary Mylne only child of the Rev Cyril Johnson, Canterbury

STICH—HARMAN.—On July 24th, at St Lawrence's, Whitchurch Dr A Denham Stich, M B Glasg A.I C., to Muriel Nancie, only daughter of Mr F G Harman of Canons Park

WRIGHT—GWYNNE-JONES.—On July 17th, at Villa Candens Gerrards Cross, William Wright D.Sc. F R.C.S , to Gwladys, widow of Dr W T Gwynne-Jones, of Gerrards Cross.

DEATHS

BYRNE.—On August 2nd at Queen Alexandra's Military Hospital, Millbank, Col Joseph N M Byrne, Director Army Dental Services

DAVIS.—On July 28th Arthur Holdsworth Davis M B Lond., aged 73 years

HEAD.—On July 31st at the Tyrell Cottage Hospital, Ilfracombe Philip Alexander Dewar Head M R C S Eng., late of Croyde Devon aged 78 years.

OLDERSHAW.—On August 2nd Martin Herbert Oldershaw M D Lond F R C.S Eng., of Upper Wimpole-street W aged 46

ORMEROD.—On July 27th at Merrow Guildford Charles Evelyn Ormerod M D Brux M R.C S. Eng

RANSON.—On August 1st at Hull, Col Wilson Ranson D.S.O F R C.S Edin late R A.M C

WADD.—On July 2 th, at Richmond Hill Surrey Harry Randall Wadd M R C.S Eng

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births Marriages and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

HEALTH OF NORTHERN IRELAND

THE annual report for 1936 of the Registrar-General for Northern Ireland [1] shows that the estimated population of rather more than a million and a quarter experienced a crude death-rate of 14 2 per 1000 inhabitants and a live birth rate of 20 0 Owing to the relatively high birth-rate the natural rate of increase of the population was just double that recorded in the same year in England and Wales Neither the death- nor birth rate differs materially from that registered in the preceding quinquennium The infant mortality-rate was 77 per 1000 live births, a relatively high figure by modern standards, and has shown no definite tendency to fall over the last twelve years The experience of the urban districts with a rate of 90 per 1000 is particularly unfavourable, and there is the customary excessive figure for those illegitimately born—162 per 1000 births

The standardised death-rate of males, 11 5 per 1000, is a little higher than the corresponding rate for England and Wales, 10 4, while the female rate is considerably higher, 10 7 as compared with 8 2 Respiratory tuberculosis fell to the lowest level recorded since Northern Ireland became a separate unit in 1922, but it still accounts for approximately half the deaths occurring at ages 15–25 and nearly 40 per cent of those at ages 25–35

Puerperal mortality has shown an upward trend since 1924 The real level of such causes of death as cancer, diabetes, and cerebral hæmorrhage which fall largely upon the older age group, is made indeterminate by the large proportion of deaths ascribed to senility In 1936 one death in ten, in the total, was so described and half the deaths at ages 85 and upwards Over the last ten years this figure has been declining and also the percentage of deaths uncertified or with ill-defined or unknown causes, so that the statistics are slowly improving

The Registrar General sets them out in considerable detail both by place of registration and area of allocation His figures suggest at least two problems worthy of some study—namely, the relatively high death-rates in infancy and the less favourable experience of females than males when compared with the death-rates of England and Wales

ANIMALS ABROAD AND AT HOME

IN our attitude towards animals few of us can boast of being consistently rational Between the field—or, if you will, blood-sport—enthusiast and the humanitarian lies a gulf sometimes more apparent than real Certainly there is often common ground between them, and when for example, an attractive species of animal is threatened with extinction, they would be better employed in uniting against their common enemy, the commercial slayer, than in acrimoniously disputing with one another The latest issue of the Animal Year Book [2] is unfortunately able to give several instances of such threats D G Stead writes on the vast and largely illicit destruction of the common opossum of Australia, and A H B Kirkman gives a sad account of Africa's vanishing fauna It appears that the very existence of the Bubal hartebeest is now doubtful and that of the Cape species precarious The mountain zebra is reduced to two herds—less than 50 head all told—and the giant sable antelope is also in danger of extinction For these tragedies the undiscriminating hunter is no less to blame than the commercial slayer and, if action is not speedily taken these and many other animals will soon be as extinct as the quagga and blaauwbok

The Year Book contains notes by various writers on animals abroad which make interesting, if sometimes depressing, reading In India, for example, the Hindu belief in the sanctity of the cow forbids the killing of cattle, however old or diseased, with the result that, when their time of usefulness is over, they are either officiously kept alive or else allowed to die of starvation More heartening is the account, by M D Austin, of an experiment in the humane education of school children at present being carried out by the University of London and Deeside animal welfare societies with the coöperation of the director of education for Flintshire which embraces both urban and rural schools The urban schools have an annual film exhibition and, if it is desired, a talk on some aspect of animal welfare The rural schools have a talk, illustrated by suitable pictures and photographs Essay competitions follow the talks and are judged rather on accurate reproduction of the facts than on literary merit In 1936, 41 schools were visited and 2415 children instructed in this way C W Hume, who explains how and why the humane electrocution of dogs and cats is not yet practicable, attacks cock fighting which still goes on in the Pas-de-Calais, the same writer has much to say against gin-traps but little to offer as an alternative I E and K Ramsbottom, however, report favourably on an admittedly limited experience of the use of calcium cyanide for the humane destruction of rabbits W M Levitt discusses the practical possibility of castrating male cattle, sheep and pigs with X rays R Glave Saunders's advice to those who would keep monkeys as pets is the same as Mr Punch's to those about to marry

The volume includes numerous reviews of books about animals and in an appendix, the aims and objects of Ulaws, the University of London Animal Welfare Society, are clearly set forth

SURGICAL EXPERIENCES IN THE SPANISH WAR

THE June number of the Portuguese journal *Clinica, Higiene e Hidrologia* is largely devoted to an account by M Gomez-Duran of the organisation of a group of advanced hospitals in the Spanish war zone and the work carried on there under his direction To these hospitals only the most serious cases can be admitted less severely wounded men being sent straight to the base hospitals Hence the relatively high proportion of cases (6 per cent of the admissions) in which no surgical treatment was attempted and in which death occurred within 12 hours Hence, also, the fact that the cases comprise chiefly penetrating wounds of the great cavities of the body, including the skull, and of the spinal cord and that a large proportion were suffering from the effects of hæmorrhage and shock In the series here reported penetrating wounds of the cranium totalled 40, of which 13 proved fatal, of the thorax 30, 4 fatal, of the abdomen 41, 10 fatal, abdomino-thoracic wounds 4, 3 fatal, multiple wounds caused by shrapnel 37 2 fatal, compound fractures of the limbs 36, 5 fatal, spinal cord lesions 6, 3 fatal, severe wounds of the head and neck 24, 1 fatal, and severe wounds of the limbs 39, 4 fatal Gomez Duran describes the routine treatment applied to each group of injuries, and comments briefly on the results His paper should be of interest to other army surgeons

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WE are asked by Dr H V CRABTREE (Torquay) to announce that he is no longer associated in partnership with the Southern Medical Agency, and that in consequence of his withdrawal all correspondence for that agency should be addressed to 1 Albert-street, Birmingham

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[1] Government of Northern Ireland The Registrar General s Annual Report for 1936 containing general abstracts of births deaths and marriages registered in Northern Ireland during the year H M S O 1937 Pp 74 2s 0d

[2] Animal Year Book Edited by H F Borgmann Ph D Vol 4 Obtainable from Ulaws 42 Torrington square W C 1 1937 Pp 163 2s 6d

ADDRESSES AND ORIGINAL ARTICLES

TRANSFUSION OF STORED CADAVER BLOOD

PRACTICAL CONSIDERATIONS THE FIRST THOUSAND CASES

BY S S YUDIN
CHIEF SURGEON TO THE SURGICAL CLINIC OF THE SKLIFOSOVSKY INSTITUTE, MOSCOW DIRECTOR OF THE SURGICAL CLINIC POST-GRADUATE MEDICAL SCHOOL, MOSCOW

THE idea of using Prof. Shamov s experimental data to attempt the transfusion of cadaver blood in man occurred to me when he first reported his results in dogs in September 1928 A that time I had under my charge the entire surgical and accident departments of the Sklifosovsky Institute—the central hospital for emergency surgery in Moscow with its population of nearly four millions Among the 8000–10 000 emergency cases passing through my control annually there were a very large number urgently needing blood transfusion. Many arrived late at night and it was difficult at times to find suitable donors at once At the same time the first-aid ambulances very often bring to the Institute cases with trauma or acute cardiac failure so severe that they die in the receiving room or even on the way Under such circumstances it would be possible almost any day to procure fresh cadaver blood of a suitable group

While in Prof Shamov s experiments on dogs the misgivings about the danger of so-called cadaver toxins were allayed in man there is the additional complication of syphilis The Wassermann reaction had to be carried out in the quickest possible time, assuming that the reaction in cadaver blood would give the same results as in the blood of the living. It may now be considered established that the serum of cadaver blood behaves in the same way as in life in the fixation of complement

It was, however exceedingly difficult to accelerate the Wassermann reaction itself in order to ascertain quickly the suitability of the blood for transfusion I discussed the matter in conference with all my assistants and with the leading serologists in Moscow with the conclusion that with constant readiness and a daily examination of the titre of all the reagents it would be possible, at best to complete the reaction in four hours. For a whole 18 months we pondered over this question but we could find nothing better and this left the method of little practical use

THE FIRST TRANSFUSIONS

During this time however the need continually arose for urgent transfusions to patients dying from acute hæmorrhages and almost compelled one to use cadaver blood to save their lives even though it meant foregoing the Wassermann reaction. Of course to the risk of causing the death of the very first patient by cadaveric intoxication there was added the risk of syphilitic infection It was therefore necessary for the first attempt to have an almost hopeless case to make it worth while But then there was greater risk that such a patient might die even in spite of the beneficial effect of the transfusion after which I would hardly succeed in convincing anyone that the death was not due to cadaveric intoxication.' Such a result would not only check all further attempts at cadaver blood transfusion for a long time but it would probably also involve grave consequences to myself both in my profession and at the hands of the legal authorities

It would thus be preferable to select for the first attempt a case that was not too serious But such a course was opposed by my conscience as well as by moral considerations.

When on March 23rd, 1930 I was called out to the receiving room and shown a young engineer who had severed the blood vessels at the elbow in an attempt to commit suicide I saw that there I had the conditions that I desired He was dying of acute anæmia but otherwise he was a strong robust man At that same time in the receiving room lay also the corpse of a 60-year-old man who had died six hours previously from a fractured base due to being knocked down by an omnibus The blood of the old man was of the same group as that of the young engineer Lastly my moral responsibility in the event of failure would have been minimal in that the patient himself had courted death I ordered the corpse of the old man to be transferred to a laboratory whither a nurse and assistants were summoned Having painted the abdomen with iodine I performed a laparotomy and widely exposed the inferior vena cava. Pumping with a Janet syringe through a hollow needle and a rubber tube I managed to obtain 120–130 c.cm of blood at once after which the vein became quite flat and I had to wait for a fresh accumulation of blood At the next aspiration only about 50 c cm was obtained, and the vein was again empty To hasten the filling of the vein I had the feet and hands raised and massaged while the chest was rhythmically compressed Altogether 420 c.cm. of cadaver blood had been collected, when I was told that the would be suicide was almost at the point of death and that we should have to hurry with the transfusion. We quickly repaired to the operating room whither the dying man had been transferred. The radial pulse was impalpable and he was deathly pale and unconscious, with Cheyne-Stokes respiration I could not feel the pulse in the femoral artery but it was just palpable in the carotid The pupils reacted feebly to light The severed cubital veins were visible in the wound.

The collected blood was held in a Bobrov apparatus with an admixture of 250 c cm physiological saline After the injection of the first 250 c.cm of blood the radial pulse began to be clearly felt, and after the next 150 c.cm of blood the patient began to breathe evenly and deeply Soon consciousness returned and by the end of the transfusion the patient had a good pulse and his colour had improved The transfusion itself passed off without giving rise to any general reaction and there were no other complications Two days later the patient was discharged fully recovered and with the wound sutured

This first success exceeded all my expectations, and fortunately the autopsy on the body of the old man showed no trace of any lues or any other disease

A few days afterwards I managed to collect from another body about a litre of blood which I transfused forthwith to three patients in my clinic—two cancer cases preparing for operation and a woman with an amputation at the hip for trauma, with sepsis and a non healing stump All these transfusions had excellent effects and passed off without complication. Soon afterwards three more transfusions of cadaver blood were made with equal success

I reported on the experience of my first seven transfusions of cadaver blood to the Fourth Congress of Ukrainian surgeons at Kharkov on Sept 7th, 1930 I asked the delegates for their formal approval of the work I had begun since with the support of the congress it would be easier for me to remove any official obstacles to my obtaining fresh bodies The congress appointed two commissions legal and military and both recognised my work as having a scientific foundation and meriting further development This support enabled me on returning to

Moscow to obtain a special permit from the State attorney's office for collecting blood from fresh cadavers in our hospital before autopsy

FURTHER EXPERIMENTS

Before renewing the transfusions of cadaver blood I instructed my two assistants, S I Barenboim and M G Skundina, who repeated Prof Shamov's experiments on dogs, to supplement them by an accurate study of gaseous exchange using Barcroft's method. Their work was carried out on 49 dogs in which the oxygen content had been carefully measured. The animals were subjected to profuse bleeding and the oxygen content was again estimated. These investigations showed clearly that the great decrease in the oxygen exchange after each exsanguination was followed by a sharp increase after the transfusion of corresponding doses of cadaver blood It was thus established that fresh cadaver blood acts not only as a suitable colloidal fluid to replenish the loss in the vascular system, but that it can actively participate in one of the major functions of the blood—i e, the exchange of gases The erythrocyte of fresh cadaver blood completely regains its rôle as an oxygen carrier Of this we further convinced ourselves by control experiments, when blood from living animals was transfused instead. It was found that the oxygen content was not increased any more than in similar transfusions with cadaver blood

Barenboim and Skundina, resuming the study of transfusions in man, also measured the direct gas exchange in a series of patients both before and after transfusion of cadaver blood. And in all these cases the oxygen content and oxygen capacity of the blood were sharply increased after transfusion of cadaver blood

Thus, not only by excellent clinical results, but also by direct, accurate measurements of the gas exchange, we satisfied ourselves that in transfusing blood from bodies 6–8 hours after death we introduce vital blood, capable of discharging its major functions in the recipient No toxic phenomena nor any other complications were observed, and in January, 1931, we were able to report our impressions of 50 cases

TECHNIQUE

By this time some of the technical details were clearly established. *It was found that the most convenient method was to take blood from the jugular vein*

The vein is exposed by a small incision between the clavicular heads of the sternomastoid It is temporarily clamped between two forceps and two strong ligatures are passed near them under the vein Between them the vein is opened and a wide U shaped cannula is inserted, the end pointing in a cranial direction The other end of the cannula is fitted to a rubber tube the end of which is lowered into a sterile bottle The body is then placed in the Trendelenburg position, and the blood then begins to flow into the bottle If the flow ceases a slight readjustment of the cannula in the vein is needed, or it may be enough to turn the head slightly

Subsequently, when the Moscow Blood Transfusion Institute recommended inserting a long glass cannula through the jugular vein into the right auricle we added a second cannula, running in the direction of the heart, thus collecting blood in two bottles at the same time

The quantity of the blood collected varies, depending on a number of conditions, the most important being rigor mortis It stands to reason also that the corpses of persons dying from injuries, after a considerable loss of blood either externally or into the cavities, will yield less than uninjured bodies, as, for instance, those from angina pectoris or electric shock Since we gave up using bodies with severely damaged extremities, or with considerable injury to other parts, the selected material yields an average of 900–1500 c cm per cadaver in deaths from trauma, while from uninjured cases we usually receive 1 5–2 5 litres, and often 3 5 l and sometimes even over 4 l I attempted to obtain larger quantities by exposing the femoral artery as soon as the spontaneous flow of blood had ceased, injecting 1 5–2 l of physiological saline This enabled the collection of an additional litre of blood from the jugular vein, although this was diluted, it nevertheless rarely contained less than 45–50 per cent of hæmoglobin This washing out of the blood is admissible only under two conditions—if the corpse is uninjured, and if death occurred recently It was demonstrated by the investigations of Prof Shamov's assistant, Dr Kostiukov, that infection of the blood in the mesenteric veins takes place from the intestine approximately 20 hours after death Although we never withdraw blood later than 6–8 hours after death—generally it is 2–4 hours—if the mesenteric blood should happen to be infected earlier, the washing out with saline would cause the whole of the collected blood to be infected This risk is entirely absent in the free oozing of the blood from the jugular vein

Interesting experiments have been made by Dr A V Rusakov, pathologist to the institute

Dissecting cadavers with all the necessary precautions, he injected Indian ink or concentrated methylene blue into the exposed mesenteric veins Neither the dye nor the ink was displaced from the point of injection, and no trace of colour was found in the collected blood Blood from the jugular vein comes only from the upper and lower vena caval system—i e, from the regions least subject to infection

Since we have been able lately to obtain large supplies of blood, thanks to the delivery of bodies from all over Moscow organised by the first-aid ambulances, we could afford to ignore the loss of the blood from the portal system If, however, it is necessary to attempt to make full use of all the resources of each uninjured cadaver corpse—particularly of a universal donor—it would be possible by washing out with saline to collect an additional 1–1 5 l of 50 per cent blood This need has now arisen in connexion with the enormous quantities of blood required in continuous drip transfusions when we transfuse huge doses at once But it is best not to subject such diluted blood to long conservation, as owing to its dilution with physiological solution it is after all subject to partial hæmolysis earlier than whole blood

STORED BLOOD

The possibility of storing cadaver blood solved one of the major aspects of the problem It not only removed the difficulty of the Wassermann reaction but also allowed time for a most thorough autopsy and for a bacteriological examination of the blood obtained

For our first transfusions we collected the blood into bottles containing some 4 per cent sodium citrate solution, periodically adding more as the bottles filled with blood, calculated in the usual proportion This citrated blood was used either immediately or after a few hours

Once after performing a transfusion, I had about half a litre of unused citrate cadaver blood left, and I placed it in a refrigerator in the laboratory Three days later an elderly patient was brought to me in the clinic with profuse intestinal hæmorrhage due to an ulcer He was in a very grave condition and it was absolutely impossible to operate on him without transfusion of blood During the night the hæmorrhage was renewed the patient was obviously succumbing but no suitable donor could be found I transfused him with half the cadaver blood that had been kept in the refrigerator for three days His condition at once improved and I placed him on the operating table It proved technically to be a difficult case yet the patient bore up well to a resection of the stomach and part of the duodenum under local anæsthesia On the operating table I gave him the remainder of the stored blood The patient fully recovered and got well without any complications

Since that time we began to store cadaver blood of all groups keeping it with citrate in a refrigerator In November 1932, I reported on my work before the Société nationale de Chirurgie in Paris and was able then to report on 100 transfusions of cadaver blood stored for three weeks and longer—once even it had been kept for 28 days I have described the details elsewhere (Yudin 1933a)

The problem of blood storage has been studied in a number of research institutions of the U.S.S R Prof Spasokukotsky's clinic, for example stored blood with an addition of physiological saline The Central Institute of Hæmatology directed by Prof Bagdasarov has prepared a very successful preserving fluid IPC and Prof Barinstein in Odessa has succeeded in demonstrating that sea-water contains a combination of salts in a very suitable proportion for blood storage

FIBRINOLYSIS AND ITS ADVANTAGES

After performing over 200 *transfusions* in my clinic we introduced substantial changes in the technique of blood storage

My assistant Dr Skundina turned her attention to the remarkable phenomenon that the blood collected for the Wassermann reaction—i.e. without the addition of citrate—remained liquid unlike the blood of living donors This prompted her to study this phenomenon more closely in conjunction with our pathologist Dr Rusakov Their joint study of material from over 500 bodies disclosed the following facts If the blood is obtained from the body of a person that died from a severe disease—e.g cancer tuberculosis or sepsis—or from trauma with prolonged shock it slowly forms a coagulum that cannot be dissolved remaining firm until putrefaction On the other hand the blood of corpses in cases of sudden death—whether due to severe acute trauma such as concussion gunshot wounds suffocation or electric shock, or to a short attack of angina pectoris or apoplexy—when taken into the test-tube quickly coagulates into an ordinary clot, but very soon after ½–1½ hours this dissolves on its own accord and the blood becomes liquid again This fibrinolysis may be somewhat accelerated by heating or by shaking while artificial saturation with oxygen retards it

A whole series of very careful experiments and biochemical analyses carried out by Skundina and Rusakov gave no indications of the possibility of autolysis or disintegration of protein molecules. This is proved first by the fact that in the serum of the fibrinolysed blood the quantity of residual nitrogen is not increased It was proved furthermore that the fibrinolysis in the blood of those who die suddenly is due to the gradual disappearance of fibrinogen Ultramicroscopic examinations enabled Dr Rusakov to carry out direct observations on a very thin reticulum of fibrin this broke up into particles that do not pass through a filter

The phenomenon of fibrinolysis in itself is extremely interesting both from the theoretical and practical point of view but though Skundina and Rusakov in their researches have studied how the process of fibrinolysis occurs we still do not understand the striking difference between the blood in sudden death and that of living people while in those dying from severe diseases it behaves exactly as that of living people The non coagulation of the blood in sudden death has perhaps an analogy in what we find in hæmorrhages into large cavities where it usually remains liquid for a long time.

An interesting supplement to these observations has recently been discovered by my assistant Dr A A Bocharov He had collected by venepuncture into test tubes samples of blood from two severe cases of trauma brought to the institute in a state of profound shock The blood of both showed typical fibrinolysis remaining liquid. One died in spite of all our efforts while the other was saved by an operation and by copious transfusions of cadaver blood On his recovery his blood was observed to coagulate normally These two cases are so far solitary ones and will have to be supported by considerably more material but should the discovery be confirmed it should be very significant, because it indicates that fibrinolysis may set in while the patient is yet alive

The practical significance of the fibrinolysis of cadaver blood is twofold First although we never transfuse blood without a careful preliminary autopsy and a Wassermann reaction it is an added guarantee against using of blood of diseased people for the purpose of transfusion for this would coagulate and remain clotted thus being unsuitable for transfusion. Secondly the blood does not need any anticoagulant once dissolved it remains liquid during any period of storage. Besides merely simplifying the technique this has another advantage The addition of any anticoagulant is bound to affect the composition of the blood *for even water is an undesirable* ingredient, and our experience has clearly demonstrated the unquestionable advantages of transfusing cadaver blood without any admixtures Whereas in the first 200 transfusions of cadaver blood with citrate there were about 20 per cent of moderate reactions in the patients at present there have been only about 5 per cent in over 800 transfusions of pure blood

Clinically therefore the indications and the therapeutic effects of cadaver blood transfusions are the same on the whole as in using the blood of living donors If a comparison must be drawn with the stored blood of living donors, cadaver blood if used without citrate gives a considerably lower percentage of reactions and these are less severe

COMPLICATIONS

Grave complications were encountered several times but in every case it turned out to be the result of serious errors of technique We had 5 fatal complications of this kind in the first thousand transfusions of cadaver blood

In two death followed the classic picture of hæmolysis and on repeating the determination of the blood groups of donors and recipients they were shown to be incompatible In another case death was due partly to the fact that the blood transfusion to the patient—operated on for profuse gastric hæmorrhage—was given under avertin narcosis which made it impossible to control the possible initial reaction The patient had consented to the operation only on condition that it would be under general narcosis while it was undesirable to postpone the transfusion after a large gastric resection In yet another case it was not possible initially to establish the incompatibility of the groups that proved fatal, but the quality of the blood transfused was verified in an incontestable manner The same blood from one cadaver had been transfused that morning to another patient, also on account of acute intestinal hæmorrhage One of them bore the transfusion of half a litre of cadaver blood irreproachably and was successfully operated on, the other developed the signs of acute hæmolysis and died despite prompt decapsulation of both kidneys Finally, a third patient, a woman with 21 per cent hæmoglobin who suffered from hæmorrhage due to a uterine fibroid, died from hæmolysis probably on account of reverse agglutination, being of Group A, she had received 1100 c cm of cadaver blood of Group O In two days severe jaundice developed, and although there was no anuria or other sign of serious damage to the kidneys, she died on the fifth day The autopsy gave no positive data

Two more deaths directly connected with transfusions may be mentioned, aerial embolism and anaerobic infection at the site of the cubital vene section Both cases lie as a heavy burden on the statistics of our clinic, but they can hardly be taken as an objection to the use of cadaver blood as such

To complete the list of serious complications registered in the first thousand of our transfusions, there were two cases of intense jaundice which developed directly after transfusion but passed off harmlessly, with no disturbance of the general condition, temperature, or kidney function In three other cases there was after transfusion an unusually strong general reaction accompanied by rapidly developing diarrhœa, these effects ceased in the course of a few hours and had no injurious consequences

RESULTS AND INDICATIONS

All the aforementioned complications are eclipsed by the run of good results usually observed in our transfusions The effect naturally varies a good deal, depending on the grounds for resorting to the method We rarely apply and have seen little success in transfusing for systemic diseases of the blood, for septicæmia, or for peritonitis On the other hand, good results were obtained by transfusion in cancer patients both before, during, and after operation Here the transfusion of blood has greatly enlarged the scope of surgery by substantially improving the prognosis of operations even in most difficult and dangerous cases

Acute internal hæmorrhages and grave traumatic shock comprised two other large groups of our cases The after effects of internal hæmorrhages are well known, and cadaver blood has rendered us invaluable service in hundreds of extremely grave cases In a large series of upwards of 3000 cases of extra uterine pregnancy we readily resorted to reinfusion of the blood collected from the patients themselves, the same applies to cases of ruptured spleen On the other hand, in profuse gastro duodenal hæmorrhages the method of cadaver blood transfusion has opened up to us new and extraordinary possibilities During the last six years upwards of 400 cases of grave intestinal hæmorrhages have gone through my clinic Over half were operated on, but all of them received transfusion of cadaver blood in small or large doses It would be out of place here to dwell on our views and methods in the problem of profuse gastric hæmorrhages, and I have given examples elsewhere (Yudin 1933b), others will be given below

In combating severe traumatic shock, repeated transfusion of blood in large doses has proved an invaluable remedy Every surgeon knows how great is the danger to life in a severe shock, and no cardiac stimulants, narcotics, or the most profuse saline infusions can raise the blood pressure or overcome the collapse By transfusion of large doses of cadaver blood, however, we succeeded in saving a great many of them (Yudin 1933c, 1936)

The three great problems, therefore, of cancer surgery, profuse gastric hæmorrhages, and shock, have assumed a new aspect since, benefiting by the ideas and researches of Marriott and Keckwick (1935), we began to apply the continuous drip method that enabled us to inject enormous doses of blood So far our personal experience is not large enough to warrant any final conclusions, but our results in the first twenty large continuous drip transfusions justify us in building up great hopes

ILLUSTRATIVE CASES

The following are a few examples of the two main groups of patients—cancer and profuse hæmorrhage

CASE 1 —Woman, aged 50, operated on by Dr M S Alexandrov, gynæcologist to the institute, on July 25th, 1936, on account of ovarian adenocarcinoma Under spinal anæsthesia, a tumour was removed the size of an adult head An examination of the stomach revealed a carcinoma of the antrum (pathologically confirmed as belonging to the Kruckenberg type) The patient was very weak and had only 29 per cent hæmoglobin. The post operative course was without complications, but when she was brought to my clinic a fortnight later the hæmoglobin had dropped to 21 per cent, red cells to 2,320,000

Her blood belonged to Group B A continuous-drip transfusion of 500 c cm of cadaver blood produced a slight chill with thrombosis of the cubital vein Three days later a fresh transfusion was begun on the other arm and in the course of 30 hours another 2200 c cm of blood of Group B collected from seven different cadavers was injected, and there was no reaction whatever The hæmoglobin rose to 62 per cent, red cells to 4,660,000 Her general condition was excellent and under local anæsthesia on August 20th I performed an extensive resection of the Polya Finsterer type Dr Alexandrov, who was present during the operation, scarcely recognised his patient, so well did she look after the transfusion The post-operative course was perfectly smooth and I allowed her to walk on the third day On Sept 5th she went home in splendid condition

CASE 2 —Woman, aged 43, with a large cancer of stomach Very pale, cachectic Hæmoglobin 42 per cent, erythrocytes 2,930,000, leucocytes 7800, differential count normal, Group B

Before operating I injected her with 4100 c cm of cadaver blood for 50 hours by the continuous-drip method, at first with 400 c.cm of Group AB stored for 7 days, next with 800 c cm of Group B stored for 5 days, then again 800 c cm of Group AB and 5 days storing in the quantity, and finally 2100 c cm of Group AB again. After transfusion of the first 200 c cm there was a rigor and vomiting which quickly subsided, the remaining quantity she accepted almost without reaction A local reaction along the vein to the armpit region remained for two days after transfusion, as also did a slight jaundice of the sclera Urine was normal

The hæmoglobin rose to 85 per cent, erythrocytes up to 5,120,000; leucocytes to 8400, with a normal differential count General condition improved beyond recognition, and I placed her on the operating table in quite a good state Unfortunately, the tumour proved to be quite inoperable After 22 days she left the clinic with hæmoglobin 69 per cent, erythrocytes 4,830,000, and leucocytes 7500

CASE 3 —I was approached by a woman physician of my acquaintance for advice about her husband who had been treated during two years for severe colitis due to amœbic dysentery In spite of treatment in several hospitals his health was growing steadily worse and I found him extremely cachetic, with his hæmoglobin only 11 per cent Without going into the question of diagnosis and therapy I at once suggested blood transfusion The wife was aware of my method of cadaver blood transfusion and she requested me to use living donors. I asked her to purchase and deliver to me citrated blood from the Moscow Institute of Hematology and she brought 400 c.cm. of blood, which raised the hæmoglobin to 19 per cent. I asked for more and she brought another 500 c.cm. and it rose then to 29 per cent By that time my original diagnosis of cancer of the splenic flexure of the large intestine was confirmed by X rays and I decided that I would operate only if by means of further large transfusions I could substantially raise the hæmoglobin and improve his general condition—it was a question of an additional 2–3 l of blood The patient and his wife in view of the tremendous expense involved finally had to give in and consent to the use of cadaver blood By the drip method I injected 2100 c.cm of cadaver blood of Group O and the hæmoglobin rose to 76 per cent I operated on him in splendid condition under spinal anæsthesia—a right hemicolectomy He had a smooth recovery and when I saw him five months later he was flourishing

CASE 4.—Cachectic old man aged 66 Cancer of stomach occupying two-thirds of antral part Operating under local anæsthesia I managed with difficulty to separate the tumour from the pancreas, and in mobilising the duodenum I discovered an abscess formed by the disintegration of cancerous glands The cavity of the abscess was embedded in the mesocolon its base was formed by the pancreas and the upper edge of the abscess lay close to the concave part of the duodenum On mobilising the latter burst and with great difficulty I sutured the stump and performed a subtotal gastrectomy (Polya Finsterer) and a thick rubber drain was inserted in the cavity of the abscess

I must confess that the operation left on me a very painful impression as not only did I not expect any lasting recovery but I believed that the case was bound to end in peritonitis. Also the danger of operating shock was very serious Without any great hopes therefore I ordered forthwith a blood transfusion of 700 c.cm of the corresponding Group O of 4 days storage; this was injected at once on the operating table Next were injected by the continuous-drip method from three cadavers of Group O in succession, 1700 c.cm. 1600 c.cm and 1350 c.cm during 50 hours 20 minutes all the three samples had been stored for 4 days. Altogether 5350 c.cm of cadaver blood were transfused An hour after the beginning of transfusion there was a slight rigor and a temperature of 101 F Subsequently no reactions and no complications Hæmoglobin rose from 54 per cent to 80 per cent erythrocytes from 3 460 000 to 5 190 000

Smooth post-operation course Suppuration ceased in about ten days Discharged three weeks after operation in good health Examined after four months and found in splendid condition.

PROFUSE GASTRIC HÆMORRHAGES

CASE 5.—Engineer aged 30 years with symptoms of dyspepsia for four years. On Nov 18th usual pains sharply increased and on Nov 20th he had a fainting attack Nov 21st melæna; Nov 22nd in the night vomited blood and was brought to the clinic The hæmoglobin was 64 per cent Refused to be operated Hæmatemesis not renewed but hæmoglobin continued to drop and was 57 per cent on Nov 27th with erythrocytes 3,770 000 Patient himself then asked to be operated on A hæmostatic transfusion of 250 c.cm of cadaver blood of Group A was made on the evening of Nov 28th and I operated in the morning Duodenal ulcer resected (Finsterer) Immediately another transfusion was given of the same cadaver blood—1 l during half an hour and then another 1950 c.cm of same blood by the drip method for 13 hours Altogether 3200 c.cm of cadaver blood were transfused Hæmoglobin rose to 67 per cent erythrocytes to 4 030 000 Smooth post-operative course

CASE 6.—Engineer aged 28 years Duodenal ulcer since 1920 Gastro-enterostomy in 1930 in a Moscow hospital since when he had felt well until early in November 1936 there were renewed pains in epigastrium Nov 23rd sudden giddiness and fainting Nov 24th hæmatemesis; brought to the institute Pale pulse feeble hæmoglobin 64 per cent erythrocytes 4 210 000 leucocytes 8400; Group AB

I operated on him at once under local anæsthesia. Healed duodenal ulcer and large active ulcer in anastomotic loop, penetrating into the mesocolon The operation proved difficult owing to numerous adhesions. Resection of stomach and anastomosis intestine sutured end to-end; stump of duodenum sutured, with junction of Polya-Finsterer type. Patient by the end of operation was in a state of considerable collapse Prompt transfusion of blood By drip method 2 l. of cadaver blood of Group AB of 9 days storage and 900 c.cm of cadaver blood of Group B of 20 days storage were injected Patient rapidly improved No immediate reaction On the second day however jaundice appeared which increased on the third day; but neither subjectively nor objectively did this hinder recovery On Nov 26th hæmoglobin rose to 75 per cent, erythrocytes to 4 340 000 leucocytes to 18 000

CASE 7.—Woman aged 24 was suffering already 7 years from gastric ulcer repeatedly demonstrated by X rays. Last week pains sharply increased and during the last two days tarry stool Admitted with hæmatemesis, extremely pale and in a state of collapse Hæmoglobin 47 per cent erythrocytes 2,810 000 leucocytes 6000 Group A. We had four stocks of blood from different Group A cadavers of 12 14 15 and 19 days conservation altogether about 2 l. (1950 c.cm) This enabled me to venture on an immediate operation under local anæsthesia Duodenal ulcer penetrated with one edge into the pancreas and with the major part into the hepato-duodenal ligament of the lesser omentum It was a difficult resection; the bottom of the detached ulcer had to be stripped off directly under the pulsating hepatic artery The sutured stump of the duodenum had then to be invaginated and sewn by infiltrated œdematous ligaments to the capsule of the pancreas. Prompt transfusion was given of 1 l. rapidly lasting an hour without reaction; a second litre until evening lasting 8 hours Hæmoglobin rose to 61 per cent erythrocytes 3 980 000 leucocytes 10 000 Yet in spite of the smooth post-operative course the hæmoglobin soon dropped again and on the sixth day after the operation it fell to 40 per cent By that time we had fresh supplies of cadaver blood. On Dec. 31st and on New Year's Day we transfused by the drip method 1250 c.cm of Group A 1750 c.cm of Group O and again 1250 c.cm. of Group A almost without any reaction Thus during the 24 hours she received 4200 c.cm of cadaver blood and with the amount transfused immediately after the operation it made a total of 6200 c.cm of cadaver blood. Even on the night of Dec 31st the hæmoglobin had risen to 79 per cent and erythrocytes to 4 550 000 On Jan 1st the figures were: hæmoglobin 81 per cent, red cells 4 630 000 On Jan 3rd: 86 per cent and 5 380 000 respectively She was discharged in a flourishing condition

CASE 8.—On the morning of Nov 26th 1936 a man was brought to me in a very grave condition though aged 43 years he looked a man of 60 with a deathly pallor Hæmoglobin 18 per cent, erythrocytes 1 010 000 leucocytes 11 500 He had had hæmatemesis and tarry stools for the last 11 days Severe pulmonary emphysema and acute bronchitis with large quantities of sputum Appreciable puffiness of the face and considerable œdema of the legs His condition was almost hopeless. It would have been a desperate course to operate with the usual resources, the more so since the possibility of meeting with carcinoma had not been excluded. His blood was Group O On checking up my stocks I found 1350 c.cm of cadaver blood of 22 days storage and yet another 1 5 l. of freshly collected blood that had not had the Wassermann reaction.

Under local anæsthesia I opened the abdomen and I saw indeed the presence of a big antral carcinoma. Subtotal Finsterer gastrectomy 1350 c.cm of blood injected by the drip method during the day In the evening there was no more blood left and although the patient's condition was sharply improved while the hæmoglobin rose to 33 per cent and erythrocytes to 2 160 000 I ordered not to withdraw the cannula from the vein and to continue injecting the physiological solution in order to counteract dehydration On the following morning the hæmoglobin was 40 per cent abdomen soft pulse splendid but the patient was choking from a cough and expectorating a mass of green sputum Disregarding *expostulations* of my assistants, I continued the saline injection, and during the day he received intravenously another 3 l The cough was now desperate That night a negative result to the Wassermann reaction was reported and I ordered prompt transfusion of the other blood During the night 1500 c cm were transfused, and in the morning the patient was unrecognisable he was pink, "feeling fine," with a new appetite The abdomen was soft, hæmoglobin 53 per cent, erythrocytes 2,980,000, leucocytes 8600 Cough rapidly diminishing He had a smooth recovery, and the wound healed by first intention

COMMENTS

In a brief report it is impossible to describe the whole hopelessness of the condition of the last patient If my personal experience of considerably over 3000 gastric operations—including several hundred for cancer and over 200 for profuse hæmorrhage—entitles me to make a prognosis in individual cases, I must say that there was almost no chance of saving him Only the copious blood transfusion saved his life and made it possible to risk an operation on him The whole of our latest experience of large transfusions leaves the same impression

I am far from seeing in surgical treatment the whole solution to the problem of cancer Nevertheless, since to day there is no better method of treatment, our duty is to extend its field of application and reduce the percentage of operative mortality I am convinced that in this the method of *large* transfusions will open a new era

Similarly in the surgical treatment of acute gastroduodenal hæmorrhages large transfusions—of not less than 3–4 l—afford unprecedented possibilities In the conservative treatment of acute hæmorrhage we lost about 22 per cent of our patients In emergency operations the rate of mortality was nearly the same—15 per cent, to be exact In our last series with large transfusions there has not been a single death so far, even in desperate cases Further experience will show how far our optimism may go I repeat, important is not only the fact that the saving of some of our exsanguinated patients was nothing short of a miracle, but that also in all the other cases of profuse hæmorrhages without exception a few litres of transfused cadaver blood improved at once the general condition, while the post operation appearance of such patients was almost unrecognisable

To be sure, in combating the most severe forms of traumatic shock our early transfusions did not advance far beyond what Marriott and Kekwick termed "homœopathy" I have already mentioned that in the more desperate cases of traumatic shock *the transfusion of cadaver blood often gave us very good results It was just in these cases that the largest doses were given by us—800–900 c cm two or three times in succession I am inclined to think that the first transfusion even in the case of shock should not be less than a litre, after which the trans*fusion should be continued by the drip method for one or two days and even longer

There is no doubt that the giving of the largest transfusions will have certain definite clinical indications, while for the majority of the remaining cases the previous small transfusions—i.e, 500–750 c cm—will prove sufficient

Undoubtedly the method of Marriott and Kekwick was a great achievement But in using the blood of living donors it would be exceedingly difficult to find so large a number of people of whom every one individually can give only a small quantity of blood. Furthermore, the use of living donors in the drip method requires inevitably the addition of anticoagulant, and the dose of the latter in large transfusions would prove very great, 20 grammes and more This should hardly be without effect on the recipient In this respect our method of cadaver blood transfusion has an advantage, for the cadaver blood is stored and introduced without any anticoagulants It can be prepared in large quantities and kept in stocks sufficient for large doses and emergency day or night *transfusions*

In conclusion, I repeat that in well over 1000 cases of our transfusions the efficacy of cadaver blood has already been sufficiently proved The cases I have described of highly successful cadaver blood transfusions in very large doses with the best success are proof positive that even after lengthy storage this blood is free from toxic properties

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THE ARTERIAL PULSE IN HEALTH AND DISEASE *

BY CRIGHTON BRAMWELL, M A Camb, M D Manch, F R C P Lond

PHYSICIAN TO THE MANCHESTER ROYAL INFIRMARY

(Concluded from p 305)

The Korotkow Sounds

In 1905 Korotkow published his classical observations on the arterial sounds These gave us a clinical method of estimating the diastolic blood pressure He showed that the sounds heard during decompression of the arm are divisible into four groups Fig 27 is a record of the Korotkow sounds taken with an electrical stethoscope In the diagram I have represented the amplitude of the maximal vibration in these eleven records When the pulse wave first succeeds in penetrating the armlet, a series of dull thuds is heard These are the "first phase" Korotkow sounds They are succeeded in the "second phase" by sounds which are blurred and have more the character of a murmur These in turn are followed by the clear loud "third phase" sounds which increase in intensity as decompression proceeds, but later diminish at first gradually and then abruptly The abrupt diminution in intensity marks the transition from the third to the "fourth phase," and is taken as the diastolic endpoint (see Fig 27) The sounds of the "fourth phase" differ from those of the third not only in intensity but also in quality Instead of being clear and sharp, they are dull and muffled The "fourth phase" is usually a short one and, with a further fall in pressure of only a few millimetres, the sounds attain their lower limit of audibility, and silence rules throughout the remainder of decompression

SOUNDS PRODUCED BY WAVES IN CLOSED TUBES

Before considering the mechanism whereby deflation of the armlet gives rise to the changes in the Korotkow sounds which I have just described, I must refer to some experimental observations These were made

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* The Lumleian lectures delivered at the Royal College of Physicians on March 9th and 11th 1937

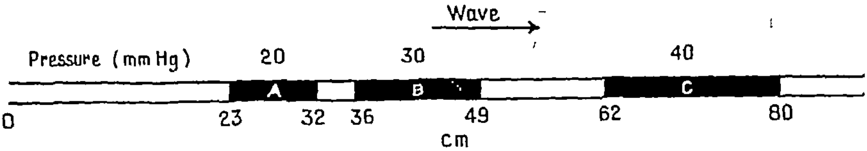

FIG 28.—Diagram illustrating position of "disturbed area" at pressures of 20 (A), 30 (B), and 40 (C) mm. Hg Lower figures indicate distance in cm from proximal end of tube

on an artificial schema of the circulation similar to that which I used for studying the change in form of the pulse-wave during transmission.

Erlanger showed that a wave in passing along a rubber tube filled with water gives rise to the production of sound and further that the sound produced exhibits striking variations, both in quality and in intensity at different points along the course of the tube The change in quality of the sounds as heard with a stethoscope enables one to map out three regions in the tube

1 In the proximal region only a dull thud is heard. This becomes louder *as one passes farther down the tube*

2 In the intermediate region the sound is very loud Here it is no longer dull in quality but sharp and snapping

3 In the distal region the sound is duplicated Here it tends to lose its snapping character and becomes fainter and fainter as one approaches the far end of the tube

Erlanger pointed out that, in the region where the loud snapping sounds are heard the wall of the tube is subject to a very severe shock This he demonstrated by sprinkling sand on the upper surface of the tube With the passage of a wave the sand is violently thrown off in that region of the tube where the shock is most severe and where the loud snapping sound is heard on auscultation In other parts of the tube the sand lies undisturbed The scattering of sand is most violent when the initial pressure in the tube is low At higher pressures it is less complete Similarly at the higher pressures, the sounds heard on auscultation are fainter and less snapping in character

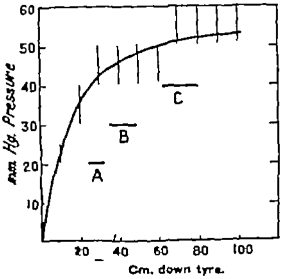

FIG. 29 —Diagram showing relation of disturbed areas" (in Fig 28) to threshold of pre-anacrotic phenomenon

While working in Erlanger's laboratory I made some further observations on this phenomenon I found that the position of the disturbed area —i.e the area in which the sand is thrown off the tube—varies with the pressure of the fluid in the tube As one raises the pressure the disturbed area recedes from the proximal towards the distal end of the tube while at high pressures the wave passes down the tube and back again without producing sufficient disturbance to throw off the sand In other words the higher the initial—i.e the diastolic—pressure in the tube the farther has the wave to travel before it produces a turbulent condition in the artery

In Fig 28 I have represented diagrammatically the results obtained in a series of experiments

When the initial pressure in the tube was 20 mm the sand was thrown off from the segment marked A near the proximal end of the tube When the initial pressure was 30 mm. the disturbed area (B) was situated farther down the tube When the pressure was 40 mm the disturbed area (C) was situated in the distal part of the tube Finally when the initial pressure was 50 mm the sand remained undisturbed throughout the whole length of the tube

In Fig 20 I have plotted the disturbed area at these three different pressures in relation to the curve of development of the pre-anacrotic waves. It is apparent that the two phenomena are closely related

When the initial pressure in the tube is low in addition to the disturbed area (A in Fig 28) to which I have referred the sand is thrown off from another region (A2) farther down the tube In the intervening region between these two disturbed areas the sand remains in situ

If now one studies the form of the sphygmogram at different points along the course of the tube (Fig 30) it is apparent that these two disturbed areas coincide with the regions where the wave front becomes unstable and where daughter waves are given off.

In the more distal part of the tube the daughter wave and the main pulse-wave

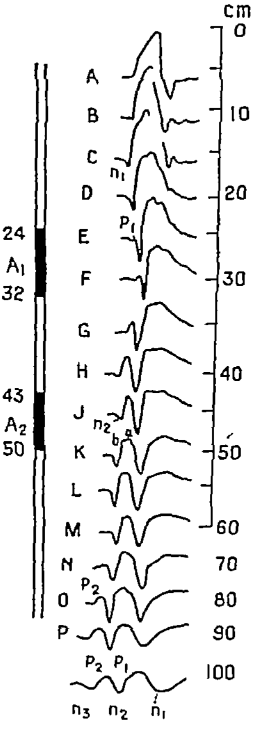

FIG 30.—Diagram showing relation of disturbed areas to form of sphygmogram.

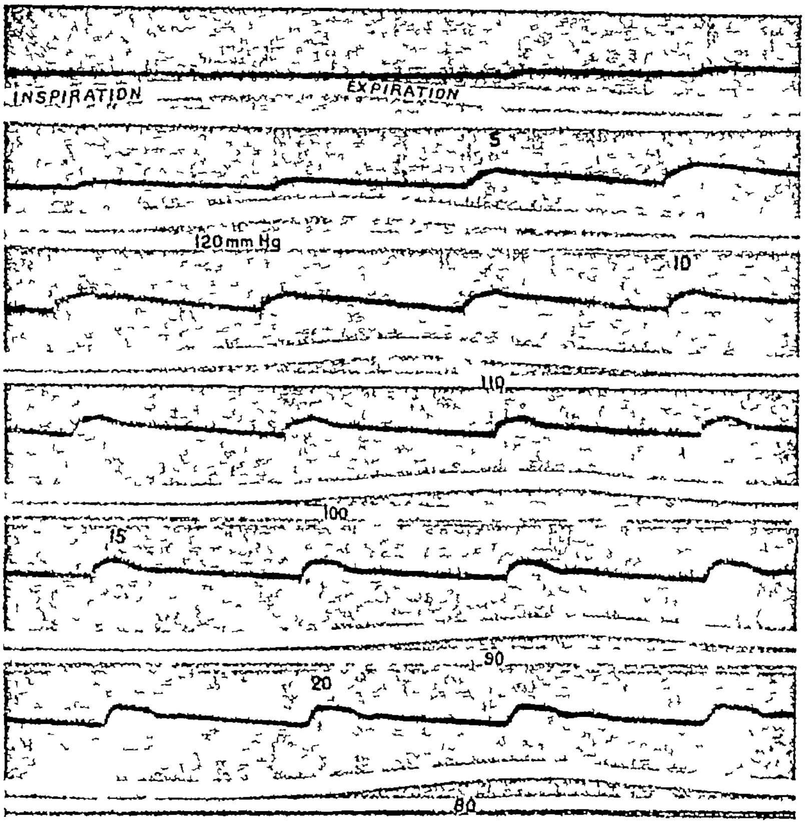

FIG 31 —Typical record The numerals on the lower signal indicate compressing pressure

are of equal amplitude This accounts for the fact that, in this region of the tube, Erlanger noted duplication of the sound I would, however, particularly call your attention to the fact that here the sounds had lost their sharp and cracking character

Before proceeding to consider the mode of production of the third phase Korotkow sounds in man, I will summarise the evidence relating sound production to the formation of " breakers " in rubber tubes

1 When a pulse wave passes down a rubber tube filled with fluid, on the upper surface of which sand has been evenly scattered, the sand is thrown off in certain places, while in other parts of the tube it remains undisturbed

2 If one listens with the stethoscope to the sound produced by the passage of the wave, one finds that in those regions of the tube where the sand was thrown off the sounds are sharp and cracking, while in all other parts of the tube they are dull.

3 If the form of the pulse wave be recorded graphically at different points along the tube, it is found that, within the disturbed area where the sharp sounds are heard, the wave front has reached a stage of development which renders it unstable and leads to the formation of breakers '

4 The distance from the proximal end of the tube at which the disturbed area is situated, the sharp cracking sounds are heard, and breakers ' develop varies with the initial (diastolic) pressure of the fluid in the tube When the initial pressure in the tube is high, none of these phenomena develop

These observations compel one to conclude that the sharp snapping sounds heard in the disturbed areas of the tube are produced by the vibrations set up by sudden oscillations of pressure associated with the development of " breakers "

THE SPHYGMOGRAM DURING DECOMPRESSION

Having considered the conditions governing the production of sound in the artificial schema, I will now refer to some analogous experimental observations in man (Bramwell and Hickson 1926) The object of these experiments was to ascertain what change in form the pulse-wave underwent in passing through the segment of the brachial artery compressed by the armlet of the sphygmomanometer and to see whether this change could be correlated with the change in the Korotkow sounds during deflation of the armlet The procedure was similar to that used in the estimation of blood pressure by the auscultatory method, but instead of listening with a stethoscope we took a record of the pulse immediately below the armlet

A Riva Rocci armlet was applied to the upper arm, and the pressure raised sufficiently to abolish the pulse in the artery distal to the armlet The air in the armlet was then allowed to leak away gradually, and, throughout the period of deflation, a continuous sphygmographic record was taken from the brachial artery immediately below the armlet, every 10 mm. fall of pressure in the armlet being signalled on the record

Fig 31 is a typical record from a normal subject while the pressure in the armlet fell from 130 to 80 mm Hg

The features to which I wish to draw attention are —

1 The gradually increasing amplitude of the first few pulse waves which succeed in penetrating the compressed segment

2 The form of the sphygmogram (*a*) at high pressures it is anacrotic , (*b*) at intermediate pressures it exhibits a horizontal plateau , and (*c*) at low pressures it is catacrotic

3 Lastly let me direct attention to the pre anacrotic and anacrotic vibrations These are present only in the first 18 cycles of this record Then they suddenly disappear, and in the remaining 4 cycles the sphygmogram conforms to the ordinary physiological type The diastolic pressure in this case was 95 mm Hg The sudden diminution in amplitude preceding the disappearance of pre anacrotic wave occurs at a stage of decompression in the immediate neighbourhood of the transition from third to fourth phase Korotkow sounds

We have made observations on patients with high and with low blood pressures, as well as on normal subjects A few examples of these are given in Table III

In all cases the compressing pressure at which the pre anacrotic waves finally disappeared was slightly below that at which the loud snapping third phase Korotkow sounds gave place to the fainter and duller fourth phase sounds The point at which the pre anacrotic waves disappear is remarkably constant in different records taken from the same subject (Fig 32) The diminution in amplitude and subsequent disappearance of the pre anacrotic wave is very clearly shown in the lower two records

These pre-anacrotic waves in the human sphygmogram bear a striking resemblance to those that we recorded in the artificial schema (Figs 21 and 22) They are also very similar to those that Erlanger observed *in the dog In his experiments during the earlier* stages of decompression a negative wave was constantly present in front of the main upstroke of the sphygmogram He showed, further that the range of pressures in which the pre anacrotic negative wave disappeared coincided closely with the transition from third to fourth phase sounds

By a slight modification of technique instead of recording the sphygmogram one can record the Korotkow sounds

If an open side tube be interposed between the receiver and the recording capsule (Fig 33) the slower pressure changes are eliminated and only the more rapid sound vibrations are recorded This is shown in Fig 34, in which the three records were made with a wide a medium, and a small aperture respectively In the record with a small aperture pulse form is recorded in that with a wide aperture only sound vibrations. The middle record is intermediate in type between the other two The open side tube also enables one to use a much more sensitive recording membrane

TABLE III

Sphygmograms during Decompression at Different Pressures

Heart rate	Blood pressure.	Negative wave lost at	Clinical condition
67	135/95	90 +	Normal
74	135/75	70	Diabetes.
82	115/45	40 –	Pernicious anæmia
77	245/125	120	Chronic nephritis.

The signs + and – indicate that the disappearance of the negative wave did not coincide exactly with one of the pressure signals but occurred at a decompressing pressure slightly higher or slightly lower respectively

We (Bramwell and Hickson 1926) have obtained optical phono-arteriograms from a number of different subjects both normal and pathological and these all present certain features in common

The most conspicuous feature in all records is a series of large deflexions which increase in amplitude during the early stage of deflation and then become smaller as decompression proceeds In normal subjects (Fig 35) these large deflexions disappear when the compressing pressure is slightly below diastolic but in patients with free aortic regurgitation (Fig 36) they persist throughout the whole record The disappearance of the large deflexions coincides with the disappearance of the fourth phase Korotkow sounds In normal subjects the fourth phase sounds die away when the compressing pressure is only a few millimetres below diastolic but in patients with a water hammer pulse they may persist throughout the whole period of decompression The amplitude of these large deflexions varies with the steepness of the front of the pulse-wave in the compressed segment under the armlet

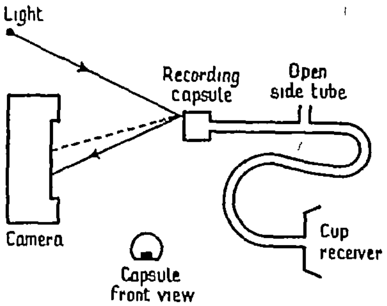

FIG 33 —Diagram showing recording apparatus, with open side tube.

In these records the large deflexions are preceded by one or more small deflexions of a higher frequency The latter are only present during the earlier stages of decompression They attain their greatest amplitude just before and die away suddenly just after the compressing pressure is equal to diastolic.

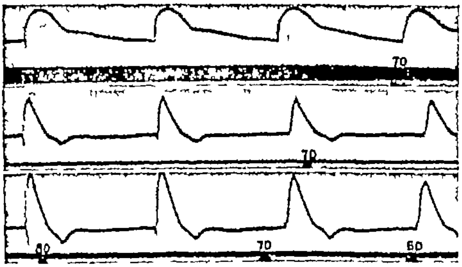

FIG 32.—Three records taken from the same subject in whom the transition from third to fourth phase sounds occurred at a compressing pressure of 70 mm Hg In the lower two records there was a small perforation in the membrane of the Frank's capsule. This accentuates the amplitude of the deflections Numerals indicate compressing pressures.

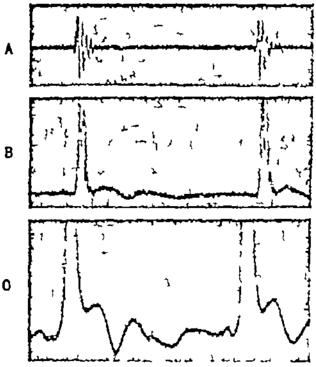

FIG 34.—Three phono-arteriograms from same subject A side tube open B, side tube partially closed C side tube closed almost completely

They correspond both in form and in incidence to the pre anacrotic vibrations in the sphygmogram, and to the pre anacrotic waves in the artificial schema.

In Fig 36 I have placed side by side sphygmograms and phono arteriograms taken at corresponding pressures from a patient with free aortic regurgitation. You will see that the pre anacrotic waves in the former, and the initial small vibrations in the latter, exhibit a very striking similarity to one another. When the pressure in the armlet is 60 mm both positive and negative pre anacrotic waves are present. At 30 mm the pre anacrotic dip is only just discernible and at 0 mm there are no pre anacrotic waves.

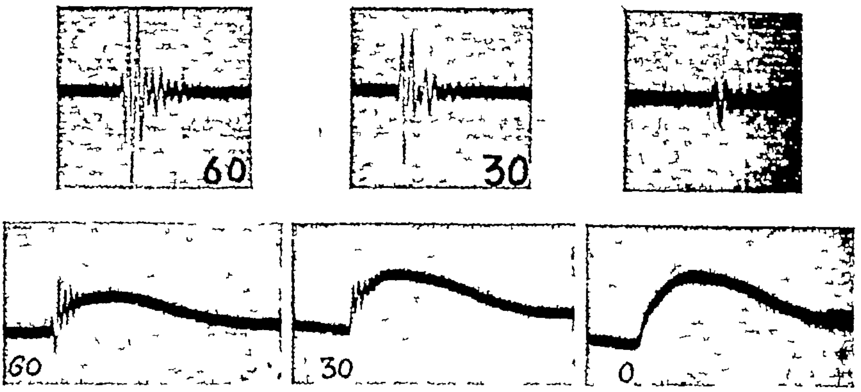

FIG 36.—Comparison of phono arteriograms (above) and sphygmograms at corresponding pressures (in figures) from a patient with free aortic regurgitation.

The fact that the pre anacrotic vibrations in the sphygmogram and the rapid initial deflexions in the phono arteriogram disappear at the same stage of decompression as that at which the sharp third phase sounds give place to the dull sounds of the fourth phase, suggests that their presence is responsible for the sharp cracking quality which characterises the third phase Korotkow sounds. The large vibrations being of a relatively low frequency yield a dull low pitched sound, while the higher frequency of the pre anacrotic vibrations gives a higher pitched and sharper crack. Thus we have established a complete analogy between the phenomena which we observed in the artificial schema and the clinical observations in man.

This part of the subject may be summarised by the statement that the evidence derived from the phono arteriograms suggests that the intensity of the Korotkow sounds depends on the steepness of the front of the pulse wave, and the peculiar snapping quality of the third phase sounds on the presence of arterial "breakers."

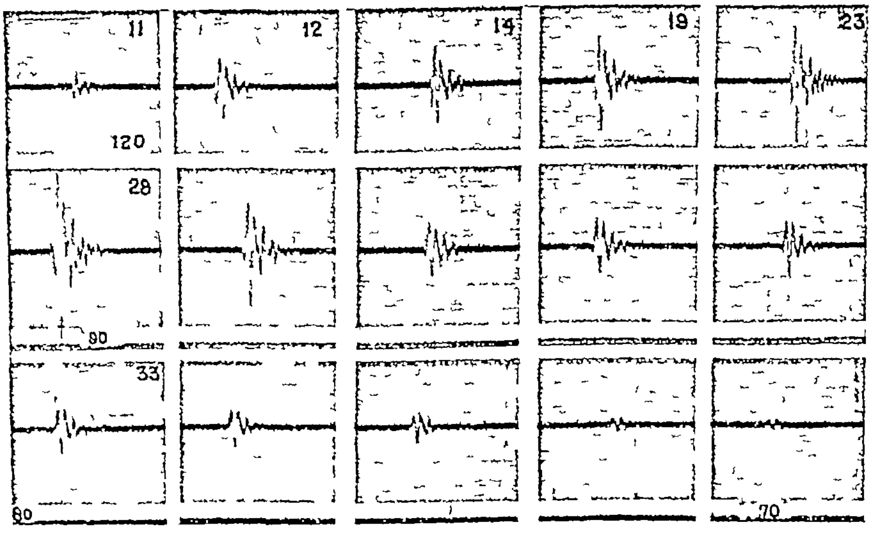

FIG 35.—Selected cycles from continuous phono arteriogram obtained from normal subject during decompression. Compressing pressure (lower numerals) signalled every 10 mm.

BLOOD PRESSURE ESTIMATION IN AORTIC VALVULAR DISEASE

The hypothesis which I have put forward helps to explain the difficulty which one sometimes experiences in estimating the diastolic blood pressure in cases of aortic valvular disease.

In patients with a water hammer pulse, loud sharp sounds resembling the normal third phase Korotkow sounds may be audible throughout the entire later part of decompression, and this is not surprising for the wave front is sufficiently steep to set the arterial walls into vibration even when the compressing pressure has fallen to zero, while the presence of *anacrotic* "breakers" gives a sharp snapping character to the sounds. It is, however, usually possible by careful auscultation to detect in the course of decompression an alteration in the quality of the sounds. This is the point at which the *pre anacrotic* waves disappear and only anacrotic "breakers" remain. It is the true diastolic end point.

Conversely, in patients with aortic stenosis it is often not only difficult but impossible to obtain a diastolic reading. The pressure gradient of the anacrotic pulse is so gradual that, even after passing through the compressed segment of the artery, no breakers are formed. The whole range of the Korotkow sounds in such cases may not extend over more than 10 or 20 mm and the true diastolic pressure lies somewhere below the point at which the Korotkow sounds die away.

In this respect the anacrotic pulse of aortic stenosis differs from the anacrotic pulse of hyperpiesis. In the latter, the pulse pressure is very high and consequently, when the compressing pressure is in the neighbourhood of diastolic, the pressure gradient under the armlet becomes very steep and "breakers" are formed.

PITCH OF KOROTKOW SOUNDS

In the past the Korotkow sounds have been employed exclusively for the estimation of blood pressure but on listening to them one cannot fail to be struck by the great range of variation both in the intensity and in the pitch of the sounds in different subjects

The volume of the Korotkow sounds varies with the amplitude of vibration of the arterial wall. This is determined chiefly by the steepness of the pressure gradient along the front of the pulse wave In cases of aortic incompetence for example the sounds are very loud while in aortic stenosis they are very faint

The pitch of the sounds depends on the elasticity of the arterial wall, and may therefore be capable of yielding information regarding the functional efficiency of the artery

When the wall of an artery is set into vibration by the sudden rise in pressure accompanying the arrival of the pulse wave it tends to oscillate in its own natural period The frequency of oscillation is determined by its extensibility This as I have already pointed out, depends partly on its structural condition and partly on the diastolic tension Thus in an arterio sclerotic vessel, other things being equal, the vibrations are more rapid and the Korotkow sounds are higher pitched than in a healthy artery

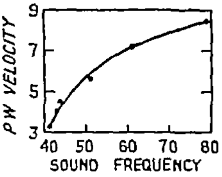

FIG 37 — Relation of pulse-wave velocity and sound frequency in eight subjects (Braithwaite 1930)

In this respect the arterial sounds are comparable to the heart sounds A high pitched second heart sound in the aortic area may be due either to atherosclerosis or to high blood pressure The former renders the aorta structurally inextensible the latter produces a similar functional result in an otherwise healthy vessel.

Some preliminary observations on this problem were made by Braithwaite (1930) In a series of 8 subjects he determined the frequency of the large vibrations in graphic records of the Korotkow sounds He also measured the velocity of transmission of the pulse wave The result of these observations is represented graphically in Fig 37 It shows a close correlation between pulse wave velocity and sound frequency This suggests that the two phenomena are dependent on a common factor—namely the extensibility of the arterial wall

These observations were only of a preliminary character but the results obtained were definite enough to suggest that it would be worth while to pursue the inquiry further

Summary

The experiments which I have described show that waves in fluid contained in elastic tubes may undergo a change in form in the course of transmission. Under certain clearly defined conditions part of the wave front tends to become steeper and eventually unstable This gives rise to a turbulent motion of the fluid in the tube comparable to the formation of breakers in a wave on the seashore

Similar physical phenomena may occur within the arteries of the living body In patients with free aortic regurgitation for example, the pressure conditions are such that part of the front of the pulse wave is likely to become unstable before reaching the periphery This probably accounts in part at least for the distinctive features of the water hammer pulse

Observations on an artificial schema of the circulation and graphic records of the Korotkow sounds in man, show that the change in the arterial sounds which accompanies deflation of the armlet, is determined by the change in form of the pulse wave as it passes through the compressed segment of the brachial artery These experiments suggest that the intensity of the Korotkow sounds varies with the steepness of the wave front, that the distinctive cracking character of the third phase sounds is due to the development of "breakers" in the pulse wave and that the pitch of the sounds depends on the extensibility of the arterial wall.

Conclusion

The problems which I have been considering in this lecture are essentially academic; but I hope that they may have proved to be of some interest in view of their bearing on clinical phenomena with which we are constantly confronted in the practice of medicine

I am indebted to Messrs Arnold and Co to the Macmillan Company and to the publishers of the *Quarterly Journal of Medicine* and *Heart* for permission to reproduce figures which have previously appeared in my original papers published by them also to Dr Graham Steell for Fig 14.

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HARLOW WOOD ORTHOPÆDIC HOSPITAL.—The new extensions to this hospital were opened on July 28th by Mr R H Bernays, parliamentary secretary to the Ministry of Health The extensions consist of a new ward block and additions to the nurses home and the administration block.

PERMANENT EXPERIMENTAL DIABETES PRODUCED BY PITUITARY (ANTERIOR LOBE) INJECTIONS

By F G Young, Ph.D

(*From the National Institute for Medical Research, London, N W*)

The demonstration that hypophysectomy alleviates the symptoms of pancreatic diabetes (Houssay and Biasotti 1931) implied that pituitary extracts might possess diabetogenic activity That the administration of anterior pituitary extracts may lead to the transitory appearance of the symptoms of *diabetes mellitus* has been claimed by a number of investigators, though others have failed to confirm these findings The results of experiments confirming the diabetogenic activity of fresh ox anterior lobe were briefly reported in The Lancet last year (Young 1936) In these experiments the daily injection of a crude extract into dogs produced, on the third or fourth day of injection, a condition characterised by the symptoms of diabetes It was found, however, that the symptoms disappeared after a few days in spite of the continued daily injection of a given dose of crude extract, although reappearance of the symptoms followed each successive increase in the amount administered daily Subsequently, as recorded below, an effort was made to determine whether it was possible to inject a dose sufficiently large to overcome completely the animal's power of becoming resistant, and the amount of extract given daily was increased until a very high level of dosage was reached. In two out of three experiments of this type the dogs not only failed to overcome the diabetogenic action of the extract but remained diabetic after the injection of extract was stopped In these two instances the diabetic condition appeared to have been permanently established.

METHODS

The methods used in these investigations will be described in detail in a general paper on the diabetogenic action of pituitary extracts to be published soon It may be said here, however, that the extract used was prepared from fresh ox anterior pituitary glands by a method essentially that described by Schockaert (1931) Glands removed from cattle shortly after death were used, the material being transported to the laboratory frozen in solid carbon dioxide Dissection of the anterior lobe was carried out while the glands were in a frozen condition, and the extraction and subsequent manipulations were all carried out as near as practicable to 0° C The extract was stored at 0° C without freezing, and was always used within five days of preparation Preparation and conservation of the extract at low temperature is essential for satisfactory results in these experiments Injections were made intraperitoneally, particular care being taken to avoid infection of the skin and abdominal wall. The dogs received a meat diet to which was added a small amount of dog biscuit They were allowed exercise daily, with inevitable loss of urine, so that the figures given for urinary excretion in this paper are minimum values Urine sugar was estimated by Benedict's method, and urinary ketones were assessed semi quantitatively on the basis of the intensities of the Rothera and Gerhardt tests, the results being expressed in terms of an arbitrary scale on which the figure 5 indicates that the ferric chloride test was just positive with a 24 hour urine volume of 1000 c cm Blood sugar was estimated by a modification of the Hagedorn Jensen method.

RESULTS

DOG 28*

Male fox terrier Original weight 11 9 kg—The daily urine volume and urinary sugar and ketone excretion of this animal for the period of pituitary injections and for four weeks after are shown in Fig 1 The first arrow indicates the time at which daily injections were begun Subsequent arrows indicate the days on which the amount of extract injected daily was increased, the figures on the arrows showing the weight of fresh ox anterior lobe in grammes used to prepare the amount of extract injected daily

The daily administration of an extract of 10 g of gland (abbreviated for convenience to 10 g of extract) resulted in an increase of urine volume and the appearance of ketonuria on the third day, but the excretion of sugar did not begin until the fifth day of injection On this day the amount of extract injected daily was increased to 15 g, this resulted in a rise of the daily sugar excretion to 46 g, after which the glycosuria decreased until the urine became sugar and ketone free on the eleventh day of injection An increase in the amount of extract injected daily, to 20 g on the eleventh day and to 25 g on the sixteenth day of injection resulted, in each case, in the reappearance of glycosuria and ketonuria The glycosuria resulting from the daily injection of 25 g of extract remained at an average of about 50 g /day for 9 days and

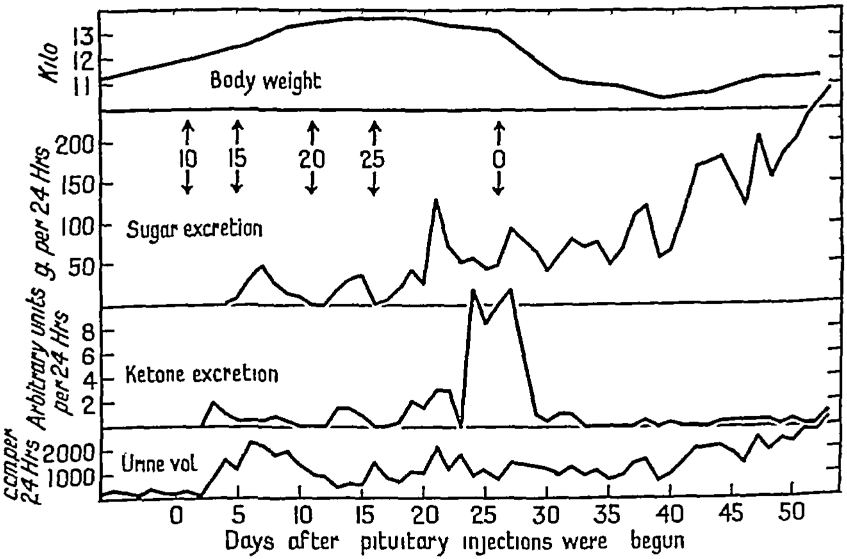

FIG 1—Dog 28 Data for period Day 0–Day 53 The figures on the arrows give the weight of fresh ox anterior lobe used to prepare the amount of extract injected daily, from the day indicated by the arrow, onwards Injections were stopped on Day 26

exhibited little or no tendency to decrease while the ketonuria increased markedly on the twenty fourth day of injection.

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* The reference numbers are those of the series of animals used for general investigations on the diabetogenic action of pituitary extracts

On the twenty-sixth day the animal passed into a semi-comatose condition at this time the CO_2-combining power of the blood was 29 vol. per cent Injections were stopped on this day with the result that the ketonuria decreased but the glycosuria persisted and after a few days began to increase This increase in sugar excretion accompanied a marked increase in food consumption Four weeks after the cessation of injections the sugar excretion had reached 264 g /day (24 g /kg /day) at which time food was withdrawn for 48 hours During the first day of fasting the animal excreted 26 5 g of sugar; during the second day 22 8 g The blood-sugar at the end of 48 hours fast was 256 mg /100 c.cm compared with 300–460 mg /100 c.cm at other times

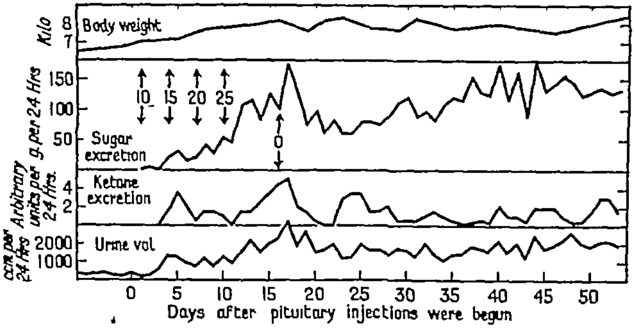

FIG 3.—Dog 40 Data for period Day 0–Day 53 The figures on the arrows give the weight of fresh ox anterior lobe used to prepare the amount of extract injected daily from the day indicated by the arrow onwards. Injections were stopped on Day 16

As has been observed in other dogs the body weight increased during the period of pituitary injections even though the animal was excreting sugar during most of this time After the cessation of injections however the weight fell until a level of about 11 kg was reached—2 5 kg below the maximum At this time the animal appeared very thin but nevertheless was quite strong and vigorous and very different from the depancreatised dog in which a similar uncontrolled glycosuria is associated with progressive emaciation and asthenia.

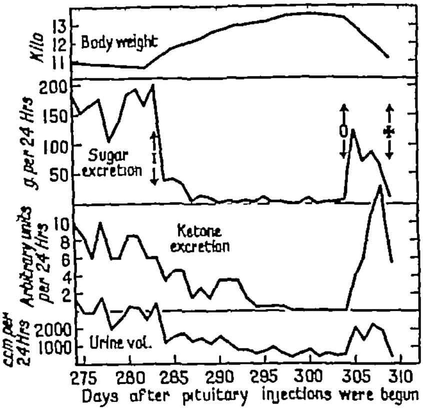

FIG 2.—Dog 8 Data for period Day 274–Day 309 At the first arrow the daily injection of 60 units of insulin was begun. Insulin administration was stopped on the day indicated by the second arrow Death occurred on Day 309

Dog 28 became permanently diabetic at the beginning of September 1936 Insulin was not administered until the beginning of March 1937 and then purely as an experimental procedure as insulin therapy seemed unnecessary for a vigorous and prolonged life From September 1936 until March 1937 the only progressive change in the animal's condition was a gradual rise in ketone excretion from an average of 0·5 on the arbitrary scale in September to 7 in March. The sugar excretion averaged about 170 g /day during this time

During the first period of insulin injections the animal was allowed to eat as much as he wished. The amount of insulin given was slowly increased until the urine was nearly free from sugar 100 units of insulin daily given in three injections before meals was required to keep the urine almost free from sugar and ketones during the time the animal's weight was increasing The body weight became constant at about 13 5 kg which was the animal's *weight at the end of the period of pituitary injections* After this body-weight was reached the animal's appetite diminished and 75 units of insulin daily were then sufficient to keep the urine volume low and the urine nearly free from sugar and ketones The result of stopping insulin administration was the immediate reappearance of the symptoms of diabetes The body weight fell to 11 kg in eight days during which time the ketonuria was very severe reaching 13 units Probably as the result of ketosis the animal's appetite became very poor so that the glycosuria averaged only 83 g /day for 11 days after the cessation of treatment Later the appetite was regained and the sugar excretion averaged 170 g/day and the ketonuria 8 units/day from March until the end of May 1937 when a second period of insulin treatment was begun. During this period the dog was given 60 units of insulin a day in three doses before meals, and a fixed amount of food daily—300 g of raw horse meat 300 g of cooked horse meat 210 g of cooked liver and 90 g of dog biscuit

The observations recorded during this period are shown in Fig 2 After 21 days of treatment insulin administration was stopped. This resulted in the animal becoming very ill and death occurred in coma on the sixth day after the cessation of treatment—i e nearly 10 months after pituitary injections were stopped. In my unavoidable absence Dr G L Brown and Dr W d A. Maycock kindly carried out the autopsy immediately after the death of the animal The liver was large and obviously fatty weighing 1030 g (9·2 per cent of the body weight) The pancreas weighed 52 g and exhibited small petechial hæmorrhages in the head and body; this together with the presence of two small areas of recent fat necrosis indicated the existence of some (probably terminal) pancreatitis On pressure blood oozed from the mucous membrane of the stomach and duodenum which appeared œdematous and very congested The spleen appeared congested There were no other obvious macroscopic abnormalities A detailed histological report on the condition of this and other dogs will be published later

DOG 40

Male black-and-tan terrier Original weight 7 kg—In this experiment the amount of pituitary extract injected was increased from 10 to 15 g on the fourth day of injection from 15 to 20 g on the seventh day, and from 20 to 25 g on the tenth day of pituitary administration In this way the animal was made to remain continuously diabetic after the third day of injection After six days of the administration of 25 g of extract, injections were stopped but the animal continued to excrete sugar and ketone Observations on this animal for the period of pituitary injections and for five weeks after are shown in Fig 3 The most striking difference between these results and those for Dog 28 is that Dog 40 did not significantly lose body weight after pituitary injections were stopped, even though the urinary sugar excretion averaged nearly 17 g /kg /day At the time of writing (July, 1937) this dog is alive and well more than two months after pituitary injections were stopped, and has increased somewhat in weight during the last few weeks His sugar excretion averages 90 g /day on a limited diet of meat only, the D/N ratio being about 3 3/1 and the blood sugar averaging 300 mg /100 c cm It should be recorded that an abscess developed a few days after pituitary injections were stopped This healed within a week without treatment and apparently had no effect on the animal's well being but may account for the increased ketone excretion between the 22nd and 29th days (Fig 3)

DOG 41

Male brown Irish terrier Original weight 10 6 kg—This animal was treated in a manner similar to that for Dog 40, but did not excrete sugar and ketone until the second day of treatment with 15 g of extract daily Dog 41 thus appeared to be rather more resistant to the diabetogenic activity of crude pituitary extract than other dogs treated similarly During three days of the daily administration of 25 g of extract the sugar excretion fell to 5 g /day and in spite of an increase of the daily injection to 30 g of extract, the animal ceased to excrete sugar and ketone Subsequently the injection was raised to 35 g /day and though the sugar excretion then rose to 128 g /day (11 g /kg /day) the animal ceased to excrete sugar after 13 days of this treatment It is interesting to note that this dog's mammæ contained a milk like fluid at the close of the experimental period although the mammary glands had never received treatment with ovarian hormones During the period of pituitary injections the animal's body weight rose from 10 6 to 12 75 kg and at the end of this period it was extremely lively and vigorous Two weeks after the cessation of injections the body weight had fallen to a constant value of 10 9 kg and the animal was somewhat subdued, although later his former high spirits were, to some extent, regained

DISCUSSION

According to Houssay the diabetic condition produced by the injection of anterior lobe extract disappears in one to three days if the administration of extract is stopped (Houssay 1936) Similar observations have been recorded by other investigators Evans (1933) found that the diabetic condition may disappear even though injections are continued, an observation which was confirmed early in the present research Further investigation showed that the symptoms reappeared if the amount injected daily were suitably increased (Young 1936) By the daily injection of a growth hormone preparation for 8–9 months, Evans, Meyer, Simpson, and Reichert (1931) produced in two dogs (but not in two litter mates) a diabetic condition which persisted for some weeks after treatment was stopped, but hitherto there has been general agreement that the diabetes produced by the administration of pituitary extract is a transitory condition only

The animals considered in the present paper differ from depancreatised dogs in a number of respects, most strikingly in that they are able to survive for a long period without insulin treatment Moreover Dog 40 has gained rather than lost weight since the diabetic condition became established Dog 28 was unwell only when insulin was stopped after a period of administration This condition seemed to be associated with the loss of the additional body weight acquired under the influence of insulin, and when, after the first period of insulin injections, the body weight had returned to the pre insulin level, the condition of the animal was greatly improved It seems possible that this dog would have survived much longer, perhaps for some years, if the body weight had been allowed to remain at a low level all the time The results of the classical investigations of Allen (1914, 1920) on the relationship between body weight and the severity of the diabetic condition in partially depancreatised animals are of importance in this connexion However, it must be stressed that, in the present investigations, Dog 40 has exhibited a heavy glycosuria over a period of two months, without loss of body weight or a progressive increase in the severity of the symptoms of diabetes.

According to my experience, gained in the laboratory of Dr C H Best in the University of Toronto, depancreatised dogs require rather less insulin than did Dog 28 to maintain the urine relatively free from sugar and ketone under similar conditions It is not possible to make a definite statement on this point, however, until depancreatised dogs have been compared with the present animals under similar conditions It should be stressed that at no time have the pituitary injected animals exhibited signs of deficiency of external pancreatic secretion, they pass normal fæces quite different from the white excretion of depancreatised animals The sugar in the urine has been definitely characterised as glucose by a comparison of the rotatory and reducing powers, and by the form of the osazone.

At present, speculation as to the reason why the diabetic condition became permanently established in the present cases will serve no useful purpose The pancreases have yet to be examined as to the condition of the islets of Langerhans, and it remains to be definitely established whether or not the insulin requirement of these animals is significantly greater than that of depancreatised dogs It is proposed to investigate these and cognate points as soon as possible, but for the present it is desirable to point out that the permanent diabetes provoked by the administration of anterior pituitary extracts differs in certain respects from that of depancreatised dogs

SUMMARY

1 As the result of the daily administration of anterior pituitary extract, two dogs became diabetic and remained so after injections were stopped without showing any signs of recovery A third animal treated similarly became only temporarily diabetic

2 The permanent diabetes produced in this manner differed from that of depancreatised dogs in that the pituitary dogs appear to be able to survive without insulin, retaining good vigour, and in one case, without loss of weight

3 The one animal treated experimentally with insulin required 60 units (4 4 units/kg) each day to keep the urine almost free from glucose on a normal (high protein) diet

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GONOCOCCAL PYONEPHROSIS

By A H Harkness M R C S Eng

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ST PETER'S HOSPITAL FOR STONE LONDON AND
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LATE ASSISTANT MEDICAL OFFICER AT ST CHARLES HOSPITAL

In spite of the great frequency of gonococcal infection of the lower urinary tract, similar infections of the upper tract are remarkably rare

Gonococcal infections of the kidney have been diagnosed upon presumptive evidence but proof of such an infection is not often found Only 13 cases of proved gonococcal infection of the kidney have been reported since the gonococcus was discovered 57 years ago

The following is a report of a proved case of gonococcal pyonephrosis —

A male nurse aged 36 was admitted to St Charles Hospital London on Oct 21st 1936 He had been suffering from a urethral discharge for ten weeks and weakness and malaise for four weeks There was no previous history of venereal disease During the late war while serving in India he had suffered from sand-fly fever and for the past 10–15 years he had been worried with a troublesome cough and expectoration of sputum During this period he had also suffered from periodic attacks of pain in the left loin. These pains did not radiate nor was there any hæmaturia frequency or dysuria One year previously he had been admitted to Highgate Hospital suffering from epigastric pain and vomiting A radiogram after an opaque meal gave evidence of a duodenal ulcer and after eight or nine weeks hospital treatment he was discharged as cured

Present illness —He had had a urethral discharge for ten weeks before admission. This he treated himself with irrigations of potassium permanganate solution, until four weeks before admission when he became ill and had to remain in bed He developed pains in the left loin anorexia, vomiting pyrexia and heavy sweats and he lost appreciably in weight He had noticed that his urine had become thick and muddy although the urethral discharge had almost disappeared He had been suffering from a cough and expectorating thick sputum for some months

Physical examination —Temperature 98° F pulse-rate 86 respirations 20 blood pressure 136/78 The patient was thin, sallow complexioned, and appeared to be rather ill Tongue furred Teeth good Heart and central nervous system normal Lungs : air entry good percussion note normal ; râles at bases. Abdomen : a large rounded slightly tender mass was palpated in the left loin ; it moved with respiration and appeared to be fluctuant Genitalia slight purulent urethral discharge The scrotal contents were normal The urine was muddy containing much pus albumin and red blood-cells Urethral smear showed a large number of pus cells and Gram negative intracellular and extracellular diplococci morphologically indistinguishable from gonococci.

A provisional diagnosis of gonorrhœa and pyonephrosis was made and further investigations were carried out Wassermann and Kahn tests were negative and the gonococcal complement-fixation test was weakly positive The complete blood count resulted as follows —

Hæmoglobin	70 %	Polymorphs	56 %
Red cells 4 240 000 per c mm		Lymphocytes	39 %
Colour index	0 83	Eosinophils	1 %
White cells	8000 per c mm	Basophils	0 %
		Hyalines	4 %

Radiogram of lungs showed evidence of old tubercular infiltration at right apex The sputum was examined for tubercle bacilli on five occasions but none was found Radiogram after opaque meal demonstrated a large dilated hypotonic ptosed stomach with a large filling defect on greater curvature probably due to pressure from without At a later stage of the opaque meal examination the splenic flexure was seen to be pushed uniformly downwards to about the level of the iliac crest The level of the hepatic flexure was not much altered The duodenal cap was within normal limits These points are shown in the Figure

Intravenous pyelography (Uroselectan B) showed the right kidney to be hypertrophied and the left renal pelvis and calyces were not shown in any of the serial films taken. The dye was well shown in the right renal pelvis five minutes after the intravenous injection.

Progress —During the first week in hospital the patient became worse The temperature was swinging 99°–101 F the pulse rate ranging from 80 to 90 He sweated profusely and vomited occasionally The tumour in the left loin was increasing in size The intravenous pyelography confirmed the diagnosis of left pyonephrosis showing that the left kidney was functionless and the right kidney was functioning well A consultation was held with Mr C Jennings Marshall who agreed with the diagnosis and advised operation. Preparations were made for a blood transfusion to be given if necessary at the time of operation

Operation —Spinal anæsthesia, 16 c.cm of 1/1500 percaine intrathecally A left lumbar incision was made and the renal tumour exposed It was found to consist of a very large pyonephrosis It was separated from the perirenal fascia and after aspiration it was removed The ureter was not dilated and appeared to be constricted at its junction with the mass Several large corrugated drains were inserted into the cavity and the wound partially sutured

Pathology —The tumour consisted of a large pyonephrosis ovoid in shape and about nine inches long by five inches in diameter at its widest part It consisted of a sac containing pus the renal tissue being compressed into a thin layer in the capsule the whole containing over two pints of frank pus A swab of pus was taken for culture and films were made

Bacteriology (Dr G W Goodhart) —Microscopical examination of smears showed large numbers of pus cells and some Gram negative intracellular diplococci morphologically indistinguishable from gonococci No other organisms were seen in the smears A culture was made on blood agar and this gave a pure growth of small translucent colonies of a Gram negative diplococcus In subculture no growth was obtained on blood agar at room temperature at 37 C a fairly free growth was obtained on ordinary agar and this was continued from agar to agar for several subcultures The organism fermented glucose but not lactose maltose or saccharose A suspension of the organisms was tested against a stock gonococcal antiserum in a series of complement-fixation tests and was found to act as a satisfactory antigen. The organism is therefore regarded as a gonococcus The growth on agar in subculture was somewhat unusually free but some typical strains of gonococcus have shown a similar growth on the particular agar used in this laboratory—a digest broth agar

Subsequent course.—After the operation the patient was rather ill, although he felt definitely better During the following four days the temperature was swinging from 100–101 5 F and the pulse-rate ranged from 100–110 There was a free purulent discharge from the wound, and after a week the temperature and pulse rate fell to normal, and the patient rapidly improved Two weeks after the operation he had a slight urethral discharge from which gonococci were cultured and urethral irrigations were recommenced Three weeks after the operation the wound was almost healed and after five weeks it was closed and the patient was allowed up At this stage the urethral discharge had disappeared and the urine was clear with no threads Further investigations were now carried out

Rectal examination revealed a small soft prostate the seminal vesicles were palpable but nothing abnormal was felt in the Cowper areas ; smears after massage were negative for leucocytes and organisms Examination of urine : no leucocytes red blood-cells, or casts were seen and on culture there was a scanty growth of diphtheroids Anterior urethroscopy demonstrated Cowper's ducts but nothing abnormal was seen. Cystoscopy : the mucous membrane of the bladder appeared normal the right ureteric orifice was normal and the left was not functioning

DISCUSSION

It is sometimes stated that a renal infection in a patient suffering from gonorrhœa is due to a gonococcal infection Generally, however, it will be found on investigation that the infection of the upper urinary tract is due to other organisms (Nixon 1911), such as the tubercle bacillus (Marcuse 1903), the *Bacillus coli* (Sellei and Unterberg 1907), or the staphylococcus In cases where a patient has either recently suffered, or is suffering, from gonorrhœa, and who has Gram negative intracellular diplococci in ureteric specimens of urine or in the pus from the kidney, it is reasonable to suppose, for purposes of treatment, that the patient is suffering from a gonococcal infection of the kidney (We consider that cystoscopy and catheterisation of the ureters in a patient suffering from gonorrhœa is definitely contra indicated)

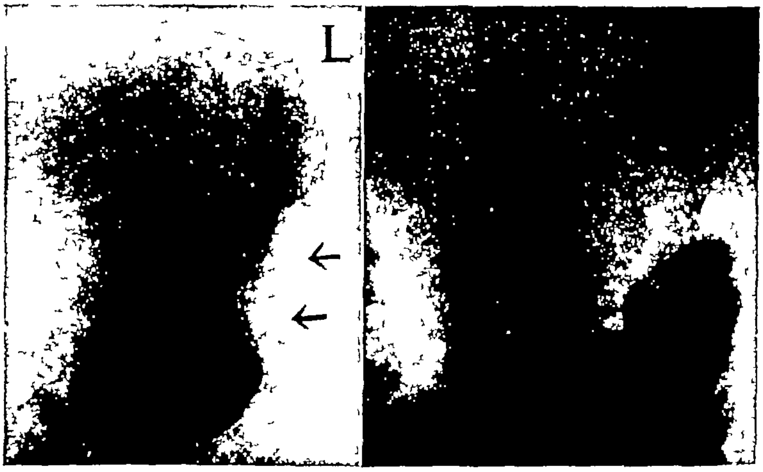
In such cases as these, however, there have been reports of instances where the organism found in the kidney has been the meningococcus or some other organism of the Neisserian group The report of Shivers (1923) clearly demonstrated this last possibility, for he obtained, from a kidney, a Gram negative intracellular diplococcus which, morphologically, could not be differentiated from the gonococcus, but which by fermentative and immunological tests proved to be the *Micrococcus catarrhalis*

Various other cases in which sufficient proof of identification was not obtained may be mentioned —viz, Westenhoeffer's case (1906) of meningococcal cystitis, and Reuter's case (1905) of meningococcal periorchitis

These few examples serve to show that to diagnose a gonococcal infection of the kidney complete bacteriological methods are necessary By the examination of a smear stained by Gram's method, and of cultures, the identification may be narrowed down to the gonococcus, the meningococcus, the *Micrococcus catarrhalis*, and unnamed Neissereæ

By fermentative or serological tests the gonococcus may be identified In the case reported above the organism fermented dextrose only, and when used as an antigen and titrated against known antisera in a series of gonococcal fixation tests gave the same results as when the same tests were performed with the usual antigen

It is worthy of record that in our case the organisms, which were proved by fermentative and serological tests to be gonococci, were grown in subculture on a *digest-broth agar* It is usually stated that the gonococcus will not grow on ordinary agar, but Vaunod (1906) and Wildboltz (1903) and others have isolated organisms that they proved to be gonococci on such media It is possible that strains of gonococci that have been found in the body in conditions not usual for them, such as in a pyonephrosis, will grow on media that are ordinarily unsuitable It is well known that gonococci will frequently grow after inoculation on ordinary agar if a heavy transfer of pus is made on to the medium The gonococcus will frequently grow in subculture on the digest-broth agar which was used for these tests but will not do so on ordinary agar



Radiograms showing, left large filling defect in greater curvature of stomach right splenic flexure of colon pushed down to level of iliac crest

In 1930 the literature of gonococcal renal infections was collected and reported by Parmenter, Foord, and Leutenegger The period covered over fifty years since the gonococcus was discovered and there were 58 references, with 164 case reports Of these, 104 were discarded either because they were reported before 1879, the year Neisser discovered the gonococcus, or because they were cases reported after 1879 but which had no bacteriological examinations The remaining 60 cases were divided into three groups, according to the bacteriological investigations done

(1) Possible group (28 cases), in which smears only were done

(2) Probable group (27 cases), in which smears were supplemented by cultures

(3) Proved group (5 cases), which were proved by fermentative and/or serological tests

To this latter group of 5 cases they added 4 of their own, making 9 proved cases

Since this paper was published there have been a number of additional references to gonococcal infection of the kidney, but we have only found 4 case reports where absolute proof of gonococcal infection has been supplied Of these Okada (1934) reported two, Kessler (1932) and Uhle (1934) one each These, together with the case now reported, making 14 altogether, are the only reported cases in which the gonococcal infection of the kidney has been proved beyond all doubt,

The route of infection of the upper urinary tract has been so well discussed by Kessler (1932), Johnson and Hill (1924), Simmons (1922) and others, that we shall not attempt to do so here In our case the appearance of the pyonephrosis at operation suggested that it was first a hydronephrosis which became infected The history that the patient had suffered from severe attacks of pain in the left loin for about 15 years also suggests that this view is reasonable Therefore it is suggested that a primary renal abnormality has been secondarily infected by the gonococcus

SUMMARY

1 A proven case of gonococcal pyonephrosis is described, the cultures from which were pure and contained only gonococci

2 The tests by which the gonococci were identified include the necessary fermentative and serological tests

3 The organisms grew in subculture on a digest-broth agar This fact is not evidence against their identification as gonococci but does suggest a viability above the average

4 Including the case presented here there have been only 14 cases of gonococcal infection of the kidney reported where the diagnosis has been proved beyond all doubt.

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PNEUMOLYSIS

COMBINED WITH EXTRAPLEURAL PNEUMOTHORAX AND OLEOTHORAX

BY BRIAN RHODES, M B Glasg.

ASSISTANT PHYSICIAN MONTANA HALL, MONTANA SWITZERLAND
DOROTHY TEMPLE CROSS TRAVELLING FELLOW IN *TUBERCULOSIS*, 1935–36

THIS paper has been written to describe a method of treatment of pulmonary tuberculosis which has been revived in recent years in Germany and which is arousing considerable interest on the Continent

Since the value of artificial pneumothorax has been recognised workers have tried to find means of collapsing the lung in cases where intrapleural adhesions prevent satisfactory collapse This problem has stimulated the development of cauterisation of adhesions and such operations as phrenic nerve paralysis pneumolysis and thoracoplasty

Recently I had the opportunity of visiting Graf's clinic at Coswig near Dresden where the method of pneumolysis combined with extrapleural pneumothorax and oleothorax has been in use for three years. I also visited the tuberculosis hospital in Heidelberg where Schmidt has treated the largest number of cases The value of the treatment in their hands is undoubted.

HISTORICAL

Pneumolysis combined with wax plugging has enjoyed a certain degree of popularity chiefly on the Continent since Baer introduced it in 1913 The quantity of wax which can be used is of necessity limited and the degree of collapse is not great That this operation has not been used more widely is due to the fact that after a time the wax often begins to extrude itself Other substances have been employed such as rubber oil pieces of rib sponges and adipose tissue but their use has been short lived In view of its success intrapleurally air was suggested and employed as a filling medium by Tuffier (quoted by Bernou and Fruchaud (1935)) at the end of the last century Zorini (1933), Riviero and Romanis (1923) Nissen (1932) and Romanis and Sellors (1935) among others Any successes reported however (Jessen Rieckenberg 1920) appear to have been largely fortuitous Great difficulty was experienced in preventing the air from escaping thereby causing subcutaneous or mediastinal emphysema and in preventing adhesion formation with subsequent obliteration of the cavity In 1932 Sebestyén reported a method of combining extrapleural pneumolysis with intrapleural pneumothorax which resembles the method to be described in many respects Zorini (1933) with his apicolyse semplice and Michelsson (1935) contented themselves with performing pneumolysis over the diseased area of lung without taking measures to maintain the collapse As a method of treatment therefore extrapleural pneumothorax did not attract much attention until 1934 when Graf began to develop the method which is now in use on the Continent (Graf 1936).

THE METHOD

It is probable that most of the pneumolyses which had been carried out in the past were extrafascial. Graf succeeded in freeing the lung from the chest wall in the layer between the parietal pleura and the endothoracic fascia and in filling the resulting space with air His early results were so encouraging that he has continued with this method and has operated on more than a hundred patients in the last three years Schmidt (1936) impressed by Graf's work has operated on a more extensive series of cases in the last two years and has modified Graf's technique in some important details Both Graf and Schmidt stress the importance of freeing the lung in the subfascial layer as the cavity thus formed is lined with firm cellular tissue and hæmorrhage does not readily occur In this layer it is usually possible to free the lung all round including the mediastinal surface as far as the root and indeed Graf has succeeded in performing a complete extrapleural pneumolysis. The walls of this space are sufficiently firm and elastic to allow of the maintenance of an artificial pneumothorax without using positive pressures Should the space become smaller in spite of refills and threaten the re-expansion of the collapsed area before the end of two or three years there still remains the possibility of maintaining the collapse with oil.

OPERATIVE TECHNIQUE

For details of the operation reference should be made to an article by Adelberger (1936) Here I shall merely summarise the method at present used by Graf and Schmidt They prefer local anæsthesia with 0 5 per cent novocain. The sitting position for the patient is used support being provided by a special bolster and pillows. Through a paravertebral incision a piece of the third rib 5–6 cm. in length is resected. The intercostal nerve is cut The correct layer is found by locating the parietal pleura and working first with the finger and then with a swab on a holder in the fascial plane which separates easily with a characteristic crackling sound. Care must be taken to carry out the pneumolysis very gently and to avoid pulling any adhesions which may be attached to the ribs The whole procedure is performed under direct vision and to make this possible a special lamp which can be placed inside the wound is indispensable The lung should be freed as far down as seems necessary allowing ample margin for the inevitable shrinking in the size of the pneumolysis cavity The mediastinal surface especially should be freed as far as the lung root if this is possible If the pneumolysis can be carried out entirely subfascially, appreciable hæmorrhage will not occur Occasionally slight bleeding is seen when the pleura is adherent to a rib If there is bleeding of any severity it can be controlled without undue difficulty, as the whole operation is performed under direct vision As the freeing of the lung takes a considerable time to complete, it is advisable to cover the lung, where already separated, with gauze swabs to prevent excessive cooling, and to control the mediastinum should the patient cough during the operation When the lung has been separated to the desired extent there is a cavity occupying up to half of the hemithorax The wound is closed by stitching the intercostal muscles as firmly as possible to prevent leakage of air The subcutaneous tissue and skin are stitched in the usual manner Graf leaves a small rubber de Pezzer catheter in the wound, attached to an apparatus for maintaining a constant zero pressure in the cavity, for 24–36 hours Schmidt, on the other hand, closes the wound primarily, for he fears infection of the cavity

AFTER CARE

The patient is radiographed immediately after the operation and the degree of collapse is clearly seen At the beginning screening control is carried out daily to determine the frequency of refills Soon after the operation a fluid level can be made out in the cavity This consists of blood and serum, and as a rule gives rise to very little trouble Occasionally the fluid has to be aspirated but it seldom returns The technique of refills is exactly the same as with intrapleural pneumothorax, but a longer needle is usually required. Refills should be carried out through the space left after resection of the rib, for this area is anæsthetic The swing of the manometer is considerably less than with intrapleural pneumothorax, and smaller quantities of air are sufficient to maintain the collapse, seldom more than 200 c cm is required In a number of patients the pneumothorax can be maintained as if it were intrapleural In some patients, however, the lung tends to re expand in spite of refills A condition then occurs comparable to obliterative pleurisy In these cases both Schmidt and Graf fill the cavity with oil They use Jodipin 20 per cent, but an oil containing bromine is at present being experimented with The technique of filling the cavity with oil is the same as that of intrapleural oleothorax The oil is best given at least a week after the initial operation, for then the walls of the cavity are firm and the possibility of rupture into the lung is minimised

COMPLICATIONS

Complications during the operation are for the most part not serious Immediate hæmorrhage can usually be controlled by means of electro-coagulation, since the whole proceeding is carried out under direct vision, as mentioned above Small tears of the pleura have occurred, but have not caused any subsequent trouble No cases of air embolism have been encountered After the operation, subcutaneous emphysema is often met with, but it has never exceeded that normally met with after thoracoscopy Neither Graf nor Schmidt have seen mediastinal emphysema Delayed hæmorrhage has taken place but has been controlled in each case by aspiration Infection of the cavity is very rarely encountered, but it is a possibility and is certainly more liable to occur when drainage is used Schmidt has had no cases of infection since he began to close the wounds primarily In the cases of extrapleural oleothorax, perforation of the oil internally or externally is rare, presumably because the walls of the cavity have been allowed to stiffen up sufficiently before the oil is introduced Spontaneous pneumothorax has occurred in one case of Schmidt's

INDICATIONS

The indications are the same as for an intrapleural pneumothorax, that is to say, relatively fresh infiltration with cavitation and early infiltration which is tending to spread but cannot be controlled by intrapleural pneumothorax because of adhesions Sanatorium treatment with adequate rest should of course be tried first, and the intervention should only be carried out if the disease still shows signs of activity Owing to its selectivity, almost no normal lung tissue is put out of action as almost always happens with intrapleural pneumothorax, therefore it is of use in patients with poor air reserve or in cases with bilateral apical lesions It may be substituted for an intrapleural pneumothorax when the collapse obtained from this is non-selective owing to adhesions too extensive to be cauterised An intrapleural pneumothorax which is controlling disease of the middle or lower lobes although not exerting any influence on the upper lobe, may be combined with extrapleural pneumothorax to make the collapse effective

Cases with large apical cavities and old stiff walled cavities with much fibrosis and displacement of the mediastinum are unsuitable for this treatment, for they require permanent collapse measures If for some reason the immediate condition of the patient is bad, pneumolysis might occasionally be considered as a preliminary to thoracoplasty Both Graf and Schmidt consider that thoracoplasty is rendered easier after pneumolysis In cases of long standing apical disease it may be impossible to carry out pneumolysis because of adhesions which have formed between the pleura and the surrounding tissue Partial thoracoplasty would then have to be considered

RESULTS AND CONCLUSIONS

In three years since this operation was started, over 300 patients have been operated on Complete statistics are not yet available In November, 1936, Schmidt reported 3 fatal cases out of approximately 100 operated on Graf early in 1937 reported 7 deaths in 107 cases, all 7 occurred in the first 40 cases, and in the last 67 there has been no mortality In no instance could death be ascribed to the operation itself

It will be evident that sufficient time has not elapsed for the late results of the operation to be assessed The ultimate fate of the patients in whom an extrapleural pneumothorax has been induced will be watched with interest, for on this will depend the future of the operation. There is undeniably need for a method of treatment less drastic than thoracoplasty for many cases in which artificial pneumothorax is indicated but cannot be carried out Extrapleural pneumothorax has been evolved in the hope that it will help to meet this need Graf's and Schmidt's experience seem to justify its wider trial

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BRITISH MEDICAL ASSOCIATION

SECTION OF ORTHOPÆDICS

Mr S T IRWIN (*Belfast*) the president, was in the chair at a meeting of this section when Prof. E W HEY GROVES (Bristol) opened the discussion on operative treatment and results in

Fracture of the Neck of the Femur

He confined his remarks mainly to treatment by means of the Smith Petersen nail. It had, he said changed the whole outlook on fractures of the neck of the femur from rather gloomy resignation to confident optimism. It remained to be seen whether or not that optimism was fully justified. The great merit of Smith Petersen's nail was that it affords the maximal fixation with the minimum of trauma or destruction of tissue. The three flanges controlled rotation of the bone fragments while the thinness of the metal blades did little damage to the cancellous tissue of the femoral neck. But it was nevertheless a metal foreign body and as such was a check to tissue formation. When the pin was removed, even in cases which did well it was often found that the nail track was filled with loose bone debris or granulation tissue. It was unfortunate, said Prof Hey Groves that more information as to the end result by this means of treatment is not available. Some failures must undoubtedly occur as for instance in cases of interposition of capsule or in those where new bone formation is so feeble as to be unable to stand any strain. By Whitman's method of treatment 50 to 60 per cent only of the cases gave firm bony union after a long and tedious treatment. Smith Petersen's nail would probably give better results 80 to 85 per cent bony union might be achieved and one had also to remember the rapid recovery of function it had afforded to the patients.

The methods of application of the nail might be grouped under three headings—namely: (1) The *open operation* described and illustrated in the July number of the *British Journal of Surgery* 1936. In young subjects this was probably the method of choice it allowed an accuracy which was denied to any method guided only by X rays. It is an unjustifiable operation in old and feeble patients. (2) *Blind insertion over wire guides* this method which was associated with the names of Sven Johannson, Jerusalem and King had had a great vogue. Its drawbacks were (*a*) it was a long and tedious operation (*b*) it depended on the taking and interpreting of many X ray films. (3) *Blind insertion with a mechanical director*. The one designed by the speaker was described. The fracture having been reduced a two pronged guide was placed over the line of the bones so that one prong touched the middle of the femoral head and the other the base of the femoral neck. This enabled a drill to be passed accurately into the bone in the true axis of the femoral neck. This method was regarded as the most suitable for old and feeble patients. In after treatment eversion of the leg was prevented by a bar fixed to the sole of the shoe. A walking calliper could be used and the patient got up within a week. The nail should be removed after three months; it could do no further good and it tended in time to produce bone atrophy. Cases seen late were probably best treated by bifurcation osteotomy Schanz's cuneiform osteotomy or Whitman's reconstructive operation. Prof Hey Groves summarised the position as follows (1) The skilled use of a Smith Petersen nail is the best method of treating intracapsular fractures. (2) The nail is an efficient internal splint. It allows the patient up in a few days. (3) The nail will neither ensure nor encourage new bone formation. (4) The nail can only succeed if it is accurately inserted after perfect reduction. (5) The open operation is to be preferred in young and vigorous patients. (6) For old and feeble patients the blind method with a mechanical guide should be used. (7) In late cases bifurcation osteotomy is the method of choice.

Dr SVEN JOHANNSON (Gothenburg) said that essentials in treating fracture of the neck of the femur were exact reposition firm fixation, and good technique. Reposition was best procured by means of traction which could be either skeletal or by means of strapping. The extension must be such that it would not only correct the shortening but also the outward rotation deformity; and it was also well to have 45 abduction of the fractured leg. After a week's treatment by extension had elapsed and the fracture was completely reduced fixation was carried out on an extension table with the traction still working. The anæsthetic could be either ether or spinal though with the latter over-extension might be produced. The nail was inserted under X ray control it was not enough to verify the position of the nail by a frontal film but its position in a lateral film should also be determined. The nail should be introduced to a position which is as near axial as possible for there is much less risk of it sliding out in a lateral direction moreover in the axial position it has a better chance of replacing those forces which the normal neck of femur has to withstand. After the nail is inserted the fracture is artificially impacted. Dr Johannson showed some lantern slides demonstrating his complicated apparatus and method of insertion of the nail. The after treatment required a month in bed with massage and faradic stimulation to the leg muscles and graduated exercises. Crutches were used after getting up for three months during which time repeated radiographic examinations were made. If during the after treatment it was found that the nail had been extruded and the dislocation recurred or if the faulty position of the nail had allowed a recurrence of the dislocation it was quite feasible to remove the nail and replace it in the proper position. Even after all this one could look forward to a good bony union with some confidence. Secondary necrosis was not increased by the operation this complication seemed to occur more often in the young patient. Cases of pseudarthrosis were best treated by osteotomy though some did well with the nail. In his hands said Dr Johannson between 80 to 85 per cent of cases obtained good bony union.

Dr ELLIS JONES (Los Angeles) outlined the methods of treatment of this fracture —(1) conservative: Whitman's plaster-of Paris method; (2) operative internal fixation by (*a*) Smith Petersen nail and all its various methods of insertion (*b*) three eccentric nails placed in the neck of the femur (*c*) a tibial bone graft placed in the centre of the neck. He enlarged upon this latter method and mentioned that a subtrochanteric bone graft could also be used and

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was in fact much better As it was mainly cancellous bone vascularisation occurred early and hence the graft was beneficial in procuring bony union. It could be reinforced by metal if more stability was required during the early stages of treatment He considered that the Smith Petersen nail was being used too frequently and recommended that bone grafting should be given a wider field.

Mr Eric I Lloyd (London) pointed out that abduction fractures united well with conservative treatment These fractures should not be disimpacted and then have a nail inserted. It was difficult to say when bony union had occurred while the nail was in position, some cases refracturing even after 12 months when the nail was removed.

Mr R Watson Jones (Liverpool) said that basal and impacted fractures should be treated in plaster-of Paris A good deal depended on the blood supply of the head of the bone in cases where the Smith Petersen nail is inserted If it was intact the result should be perfect, if not osteo arthritis or avascular necrosis were liable to follow The operation should be performed within 36–48 hours, the capsule should not be disturbed, and the nail should be left in position indefinitely unless there is some indication for its removal He mentioned ionisation between the component metals of the nail as the possible cause of its extrusion in some cases

Mr H A Brittain (Norwich) said 82 6 per cent of all his cases treated by the Smith Petersen nail achieved firm bony union He mentioned the complications liable to follow the operation slipping out of the nail, external rotation, adduction deformity, and arthritis

Mr K G Pridie (Bristol) used a pneumatic hammer in inserting the nail

Mr W C Gissane (London) agreed with Mr Watson Jones that the capsule should be disturbed as little as possible so as not to impair the already poor blood-supply He advised removing the nail in 15 to 40 weeks and curetting the cavity Walking should be as early as the second to the fourth week.

In reply Prof Hey Groves noted three points of importance which had emerged from the discussion (1) there was complete confidence in the nail, (2) an immediate success does not necessarily mean a lasting one, and (3) the nail is of no use after 3–6 months

In the afternoon several of the speakers showed films illustrating their method of inserting the nail and the results which it produced.

SECTION OF NEUROLOGY AND PSYCHOLOGICAL MEDICINE

At a meeting of this section under the presidency of Dr George Riddoch, Dr F M R Walshe (London) opened a discussion on the

Early Diagnosis of Intracranial Tumours

from the clinical aspect He said that with the steady increase of technical or instrumental aids to diagnosis, it was becoming increasingly difficult to keep a firm grasp of those sound general principles which must always govern clinical diagnosis It was painfully common for one to have to make one's way through a barrage of pathological and other reports and through sheaves of X ray films before one got access to the patient So often these investigations were unnecessary explorations of the irrelevant He felt that whilst no one would be disposed to dispute this general point of view, many paid but lip service to it No student of neurological literature could escape the conviction that in neuro surgical clinics especially, radiographic methods such as ventriculography have come to take pride of place amongst diagnostic methods

Passing from the general to the particular, the speaker pointed out that the clinical course of an intracranial tumour was likely to follow one or other of certain lines of development

(1) *Recurrence of generalised epileptiform fits*—These were clinically indistinguishable from so called idiopathic epilepsy Their appearance for the first time in a middle aged individual should always give rise to the suspicion of tumour Such fits, in the speaker's experience, were rarely if ever nocturnal. Focal or Jacksonian fits might also occur, but he believed that generalised fits, contrary to popular opinion, were commonest

(2) The most frequent mode of onset for tumour was that in which the signs and symptoms of *raised intracranial tension* developed—namely, headache, sickness, and papillœdema The headache often wakened the patient in the early hours of the morning and was most severe at that time At its worst it was apt to be accompanied by vomiting, the vomiting in turn aggravating it It was not usually continuous He had never been impressed by what is spoken of as projectile vomiting, except in young children. Slowing of the pulse was by no means a common sign except in rapidly growing tumours The rate of rise of intracranial tension was an important factor in the production of bradycardia A high degree of papillœdema might coexist with a degree of visual acuity which appeared normal to the patient

(3) Yet another mode of onset was that in which the signs pointed to a *slowly progressive local lesion of the brain* These might precede the sign of raised intracranial tension, and in such cases it was the time factor as much as the signs themselves that betrayed the probable nature of the lesion Caution was necessary in interpreting the meaning of a slowly developing unilateral weakness in an elderly man, for a common explanation in his experience was paralysis agitans Another symptom complex which had localising value was that in which temperamental changes were the initial symptom Such changes might occur with tumours in situations other than in the frontal lobe, but opening of the clinical course by an increasing apathy and loss of initiative, by defective attention and poverty of ideas was, he believed, pathognomonic of a frontal lobe tumour When added to this there was unregarded incontinence of urine the picture was characteristic and could not be mistaken. In such cases papillœdema was often long delayed and might be but a terminal symptom

(4) One other clinical picture called for mention, that of *secondary carcinoma* of the brain, a condition that was probably most common in association with primary carcinoma of the lung Here the difficulties of diagnosis or localisation were increased by the fact that the secondary growths were usually multiple within the brain and because the leptomeninges might also be infiltrated Thus when a confused clinical picture was accompanied by signs of raised intracranial tension, progressive cachexia, and loss of weight, secondary carcinoma should always be suspected and a primary growth sought before any question of surgical intervention was raised.

Mr Norman Dott (Edinburgh) dealt principally with special or accessory methods of diagnosis He agreed with Dr Walshe as to the necessity of clinical investigation, which should invariably form the first line of approach But the diagnosis of intracranial tumours was a continuous process each stage in its investigation being interwoven with the others, and gross regional diagnosis was not sufficient For modern treatment it was necessary to define exactly the outlines of the tumour, its relation to vessels the ventricles and so forth For this purpose it was often necessary to use specialised methods of diagnosis *Radiography of the skull* was a routine procedure, and though negative findings were the rule the value of a positive result was considerable. Mr Dott showed a series of lantern slides illustrating the types of abnormality that might be expected—e g., abnormal calcifications erosions hyperostoses vascular grooves shifting of a calcified pineal gland and indications of general increase of intracranial pressure, such as erosion of the posterior clinoid processes and widening of the sutures especially in children As to *lumbar puncture* there was a certain danger associated with this procedure in the presence of an intracranial tumour especially a cerebellar tumour but he believed that the danger had been exaggerated Lumbar puncture should only be performed however in hospital where facilities for immediate operative intervention were available should dangerous symptoms arise. At this stage, having accumulated his clinical data radiographed the skull and examined the cerebro-spinal fluid, the investigator would be well advised to pause. Was the evidence so far obtained unconvincing or sufficient in itself to enable him to proceed at once to radical treatment? When the symptoms were acute and further accuracy in diagnosis was required for the purposes of treatment ventriculography or arteriography or both should be carried out *Ventriculography* was not without risk especially in infratentorial tumours pressing upon the brain stem but this risk could be largely averted by making the procedure an immediate preliminary to operation Visualisation of the ventricles was effected by the use of contrasting gas air or oxygen the operation being performed under local anæsthesia. The method was especially valuable (1) in cases where the signs of increased intracranial tension predominated, focal signs being absent or slight; (2) in cases of focal epilepsy and (3) in those in which it was desired to delineate more accurately the extent of the tumour Mr Dott discussed the advantages of using a diffusible substance such as Thorotrast He was aware that it was said to be a carcinogenic agent but in the past ten years he himself had seen no harmful effects result from its use. *Cerebral vascular radiography* was another method. An outline of the cerebral vessels could be obtained by radiographing the skull immediately after the injection of 5–10 c cm. of a colloid suspension of thorium dioxide direct into the internal carotid artery Phlebograms were obtained by radiographing the patient a few moments later Mr Dott showed slides illustrating the appearances in tumours of different regions. The method was especially valuable also in the detection of intracranial aneurysms—to verify their presence when suspected or to localise them exactly with a view to surgical treatment when bleeding was the only sign

Dr H L PARKER (Dublin) said that the early diagnosis of tumours had become important because of the great progress that had been made in the treatment and cure of the condition The first line of attack lay with the general practitioner it was of great moment to define clearly the first symptom complained of. Though often difficult to elicit this was sometimes clearly recalled by the patient or his friends; Dr Parker gave several illustrations supporting the value in localisation of such symptoms He was cautious in performing lumbar puncture in cases of suspected intracranial tumour even when there was no papillœdema In his experience it was supratentorial tumours and especially frontal lobe tumours which were most likely to give rise to untoward symptoms from the formation of a pressure cone

Dr ADAMS A. MCCONNELL (Dublin) emphasised the facts that intracranial tumours in the wide sense of space-occupying lesions were not uncommon and were not hopeless also that investigation by the general practitioner often led to a correct diagnosis. The early morning headache disappearing on rising or on having a meal or a motion the early morning vomiting which left the patient with a good appetite and capacity for work though by no means pathognomonic were worthy of serious investigation. He thought that operative judgment depended chiefly on clinical knowledge but that the exact localisation necessary for operation with the least trauma possible often required special instrumental methods of diagnosis

Dr T TENNENT (London) confined his remarks to discussion of the mental symptoms in intracranial tumour That cerebral tumour was not a common cause of any of the recognised forms of mental disorder treated under certificate was apparent from the statistics of mental hospitals Nevertheless abnormal mental symptoms might occur at any stage and in some cases might be the first symptom to appear Dr Tennent had analysed 75 cases of cerebral tumour admitted to the Maudsley Hospital over a period of 13 years An analysis of the post mortem findings showed that mental symptoms were associated most frequently with growths in the cerebral hemispheres and that they were more common in left-sided lesions Among the mental symptoms presented were difficulties in concentration memory defects especially for recent events irritability and restlessness amounting at times to acute excitement Such periods might alternate with retardation and varying degrees of confusion or stupor In summarising his findings Dr Tennent stated his belief that the character of the mental symptoms in these cases depended more upon the type of personality and the rate of growth of the tumour than upon its localisation In slow growing tumours changes in the personality were conspicuous In rapidly growing tumours disturbances in the intellect were conspicuous and personality changes were slight No mental syndrome could be associated with a lesion of any one area of the brain

Dr GREY WALTER (London) spoke as a physiologist on the application of the electro-encephalogram to the problem of diagnosis This instrument was similar to that used for electrocardiograms and had for its object the detection and amplification of the minute waves caused by alterations in electrical potential in the cerebral cortex He referred first to the normal α waves or Buerger rhythm In cerebral tumour a different type of wave was observed waves of slow pulsation or δ waves which he had never observed in normal persons Their time significance was not understood, but certain observations suggested that they emanated not from the tumour itself but from the cortex surrounding it the function of which was disturbed In some of the cases examined there was complete absence of any waves and this silence was difficult to interpret It had no constant significance and often proved misleading Eighty-seven cases in which cerebral tumour was suspected had been investigated by him at the Maida

Vale Hospital for Epilepsy and Paralysis. Thirty-three of these showed abnormal δ waves, and in all cases the suggested localisation was confirmed at operation. Forty-eight cases gave normal results, and in none of these had a tumour subsequently been verified. Electro-encephalography was undoubtedly of great advantage in the localisation of cerebral tumours. It invoked no danger or discomfort to the patient, but it was limited in its effectiveness. No definite results could be expected unless the tumour were affecting the cortex, which was, at the time, passing through a phase of excitability sufficient to cause the abnormal waves.

Other speakers who took part in the general discussion which followed were Dr. A. Gurney Yates (Sheffield), Dr. Purdon Martin (London), Dr. H. G. Garland (Leeds), Dr. W. Ritchie Russell (Edinburgh), and Prof. E. Mapother (London).—In summing up the conclusions that might be drawn from the discussion, the PRESIDENT emphasised that sound clinical investigations at the bedside still held paramount place. There was no short cut to diagnosis. The additional methods had their value but they must be used sparingly and with judgment. He felt that the psychiatric aspect of the problem especially demanded further study.

REVIEWS AND NOTICES OF BOOKS

Treatment of Some Chronic and "Incurable" Diseases

By A. T. TODD, O.B.E., M.B. Edin., M.R.C.P. Lond., Honorary Physician, Bristol Royal Infirmary. Bristol: John Wright and Sons. London: Simpkin Marshall. 1937. Pp. 203. 10s.

THERE is a body of teaching on the subject of medical treatment that is orthodox, familiar in principle and in greater or less detail to us all. The bulk of it, we believe, rests on sound theory, on sound experience, or on both; some, we are ready to admit, may be feeble, surviving only by virtue of tradition, and inadequately established by critical observation. From time to time a bold new voice is raised in protest, saying "You are half asleep in your orthodox rut; your treatment is all wrong; here is my new way, which accomplishes vastly better results." How are we to judge the new claim, supposing we have no side-lights on the claimant, no supposition that "because he works in So and So's department he must be fairly sound"? Such a problem must present itself to many who read Dr. A. T. Todd's work on the treatment of some chronic and "incurable" diseases. He introduces it with a sweeping condemnation of "traditional therapeutics which have years of inadequacy to support them," a praiseworthy plea for the examination and treatment of the whole patient as distinct from the part of him that appears to be diseased, and a protest against any attempt to trace rigid sequences of cause and effect in disease processes. His principle is: observe the patient's symptoms; examine him and discover what lesions or dysfunctions are present; assume that these are the cause of his symptoms, correct them as far as possible and leave the rest to nature. There is a facile and illogical confidence about this attitude that puts us on our guard as we proceed to read how the principle operates in practice.

Dr. Todd discusses diabetes first, pointing out some of the well-known gaps in our knowledge of this disease, arguing that insulin is to be deprecated because it inhibits endogenous insulin formation, and recommending the treatment of 70 per cent. of all diabetics with Synthalin for the sake of its depressing effect on glycogenolysis. Insulin is stopped if possible. Dr. Todd admits that 30 per cent. of "total diabetics" show "intolerance" to synthalin, and intermits or even discontinues its use in these. Now in diabetes, the orthodox physician is on well-charted ground, and for him the therapeutic effect of insulin is about as well defined and certain as any in medicine. He will at once be suspicious of this advice to replace it by a known hepatic poison, especially one that was widely tried in this connexion some years ago and abandoned; and he will expect a full justification of the claim for synthalin, complete to the last detail. Instead Dr. Todd hurries on with the airy remark that "nothing is to be gained by describing individual cases," and giving one reference to a few case-records in an article five years old. For toxic goitre Dr. Todd opposes surgical treatment because it is "highly irrational"; he looks for medical means of controlling "this pluriglandular dysfunction, in the hope of attaining a satisfactory treatment in time." He lays down the following routine: complete rest in bed, high carbohydrate diet with increased vitamin intake, administration of fluoride and iodine, adding in refractory cases yohimbin, ergotamine, and radiation of thyroid and pituitary. Here again the recommendations differ materially, though not in every detail, from the orthodox management of patients with toxic goitre, in which surgery plays an important part; the results of orthodox management have been assessed and reported carefully enough to serve as a basis of comparison, and Dr. Todd's challenge should therefore be supported by a detailed statement of his own results. Yet his only word on that topic is "they have done well."

Elsewhere Dr. Todd discusses conditions for which the orthodox physician often has no satisfactory or easily judged treatment, such as asthma, hay fever, "false phthisis" (i.e., chronic bronchitis), "duodenitis and hepatic defect," "false heart disease," acute rheumatism and chorea, and chronic rheumatism. His arguments and his programmes of treatment in these many conditions are a mixture of much that is orthodox and undoubtedly sound, much that is plausible but not established on good evidence, and something that will be to most readers quite strange. Each programme involves many therapeutic measures, some of which, like ethmoid packs, colloidal sulphur injections, and small doses of thyroid, recur often in different chapters. The suggestion is maintained throughout that patients treated on these lines will fare better than those in the hands of the average physician. How are we to know? An attempt at a critical verification of such a claim would take more than one man's time for many years, and might then be inconclusive. We are simply offered Dr. Todd's word for it, backed by his terse, downright, and most persuasive style. But since our criticism of his views on diabetes and toxic goitre has made us wary, we may be unwilling to take all his other treatments at their face value; we may be tempted to see in his style rather than in his prescriptions the secret of his success (for he tells us that his "private patients do not mainly come from the West Country" where he works). Perhaps his confidence, his dogmatic attitude, and his precise insistence on therapeutic detail work wonders with many patients whose chronic ailments have added to themselves the aggravation of despon dency If that be so the gibe at orthodox treatment which echoes through the book is misdirected; it should be aimed at the physician who lacks Dr Todd's gifts of style and personality

Finally the author's method of treating inoperable cancer is surveyed In 1926 he began using injections of a colloidal suspension of lead selenide The earliest results were the best Then a sulphur-selenium colloid was substituted and combined with small doses of X rays Finally a feebly radio active colloid combination of sulphur with a radium derivative has been added The details of treatment are elaborate and the result claimed is the apparent cure of 10 per cent of 300 unselected cases of inoperable cancer It sounds striking and the uninformed reader asks at once why no one else has taken up this promising method now five to ten years old He finds in the book no reference to any reports on it except those of the author and he is left wondering how many of those 30 cases if described in full and followed over a longer period would still stand scrutiny as cured In the end we lay the book down with a feeling of regret It shows so much both of ability and of enthusiasm and its story of a long sustained struggle with the cancer problem cannot escape our admiration Many of its ideas may indeed be valuable but we are left on the whole unconvinced without means of separating the grain from the chaff.

Disorders of the Blood

Second edition By L E H Whitby C V O M D F R C P Assistant Pathologist Bland Sutton Institute Middlesex Hospital and C J C Britton M D N Z Assistant Pathologist at the same Institute London: J and A Churchill 1937 Pp 582 21s

In the two years of its existence this has become a standard text book The new edition contains thirty five extra pages seven new illustrations and 400 alterations not always modern ones in the bibliography

In addition to chapters dealing with recognised hæmopoietic disorders, the blood picture in infectious diseases including parasitic conditions and in miscellaneous disorders such as allergy diabetes and coronary thrombosis is discussed A chapter is devoted to disturbances of the blood pigments where the interesting suggestion is made that idiopathic sulphæmoglobinæmia may be dependent on splenic dysfunction permitting a ready combination of the hæmoglobin molecule with sulphur The value of the section dealing with laboratory technique is increased by a fine new coloured plate illustrating the method of supravital staining for leucocytes The authors have particularly emphasised the value of classifying the anæmias in terms of cell size and hæmoglobin content On this basis they state that idiopathic hypochromic anæmia is always microcytic and that the anæmia of acholuric jaundice is always microcytic though the volume may be normal and either hypochromic or normochromic Such dogmatic statements though possibly of value to the student might well be questioned by the expert An interesting hypothesis here offered which if followed up should lead to further knowledge is that the anæmia associated with leukæmias and lymphadenoma and malignant disease of the marrow is due to disturbances of metabolism The significance and interpretation of the reticulocyte response to treatment both in pernicious anæmia and in hypochromic anæmias are discussed more fully than in 1935 and this section of the book should prove very useful those testing liver extracts and other hæmopoie remedies. Throughout the work gallant attempts made to present up-to-date knowledge in a read assimilated form tables and summaries conclu each chapter and will earn the gratitude of all studen and practitioners of medicine and pathology who a only too apt to get lost in the maze which hæmatolog presents to the uninitiated

A Textbook of Neuroanatomy

Second edition. By Albert Kuntz, Ph D M.D Professor of Micro Anatomy St Louis University London Baillière Tindall and Cox 1937 Pp 520 27s

This is a good text book Although it is compact and convenient to hold it contains an up-to-date account of the central nervous system presented to undergraduates by one who is both a research worker and a teacher in this field A short description of the phylogenetic development of the nervous system and of its ontogenetic development in man is provided in the opening chapters and a section follows dealing with the gross anatomy of the adult human brain and spinal cord The inclusion in this section of charts showing the formation of the limb plexuses and the segmental innervation of the skin will be a convenience to beginners A separate chapter entitled Laboratory Outline gives instructions not only for the dissection of the human brain but also for that of a dog fish and of a 50 mm pig embryo The account of the microscopic anatomy of the human brain and cord is illustrated by numerous drawings from microscopic sections as well as by charts showing the course and relations of the long fibre paths

Advanced readers may wish that the chapter on the autonomic nervous system coming as it does from a master of the subject, had been less brief However within its twenty pages is a good description of the peripheral part of the system an account of the central autonomic centres and their conduction paths and an outline of present-day knowledge of the physiology of the autonomic Several other subjects of importance have received more attention than is usually given to them in books of this size—e g cerebro-spinal fluid and its pathways neuroglia myelin the delivery of fillet fibres to the thalamic nuclei, recent observations on the cytology of nerve-cells difference in calibre of nerve fibres in relation to experiments in differential nerve blocking and the problem of left-handedness and unilateral cerebral dominance At the end of the book a series of simplified case histories is set out to illustrate the clinical bearing of certain outstanding features in the anatomy of the nervous system.

Principles of Pharmacy

Fourth edition By Henry V Arny Ph.M Ph.D Dean and Professor of Chemistry in the College of Pharmacy in Columbia University and R P Fischelis B Sc. Ph M. Chief Chemist Board of Pharmacy State of New Jersey London: W B Saunders Company 1937 Pp 1139 35s

In this book every aspect of the practice of pharmacy is covered. Each of its six parts deals with a specific section Parts I and II comprising approximately one-third of the book are essentially pharmaceutical The text is profusely illustrated Most of the illustrations illuminate the subject matter but a few are redundant, notably those of such common objects as bunsen burners, filter funnels, and simple water baths The galenicals discussed are essentially those of the United States Pharmacopœia, XI, many preparations of which closely resemble corresponding ones of the British Pharmacopœia and the British Pharmaceutical Codex In view of the rapid growth in the use of compressed tablets the section concerned with their preparation is disappointing The manufacture of pills is discussed in much more detail Parts III and IV deal with pharmaceutical chemistry, in the organic section endocrines and pharmaceutical bacteriology are included. The sections on sterilisation and disinfection could be enlarged with advantage The remainder of the book is devoted to pharmaceutical testing and dispensing The outstanding feature of the work is the wealth of references included in the bibliographies concluding each chapter, clearly much care and industry have been bestowed upon their compilation Although intended primarily for students of pharmacy and those engaged in pharmaceutical practice, the book should prove a good source of reference for any practitioner requiring information on pharmaceutical problems

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British Journal of Surgery

THE July issue contains the following papers —

EVOLUTION AND DEVELOPMENT OF SURGICAL INSTRUMENTS By C J S Thompson (Royal College of Surgeons, England) Observations on the shape and structure of cutting instruments from 300 B C to the nineteenth century

AN UNUSUAL CASE OF HYPERPARATHYROIDISM By G Gordon Taylor and R S Handley (London) Exploration through a cervical incision revealed no tumour, but the radiological and biochemical reports were so definite that a further operation was undertaken and the tumour removed by trans sternal approach

REPLACEMENT OF THE SEMILUNAR CARTILAGES OF THE KNEE AFTER OPERATIVE EXCISION By John Bruce and Robert Walmsley (Edinburgh) Experimental removal of the cartilages in dogs has been followed by their replacement by ingrowth of fibrous tissue It is suggested that this also happens in man, and that a complete meniscectomy is essential for a satisfactory replacement

POST OPERATIVE BLOOD LIPIDS By Eldon M Boyd (Kingston Canada) Twenty nine cases have been studied before, and from one to five times after, operation This per se had no effect on the concentration of the blood lipids Recovery from fever produced a relative lipæmia, thyroidectomy and completion of abortion produced a relative lipopenia

CHRONIC MASTITIS IN THE AFRICAN NATIVE ITS RELATION TO CARCINOMA OF THE BREAST By Maurice Ellis (Nigeria) Mammary carcinoma is known to be rare, but chronic mastitis was found to be very frequent Nodularity of the breast was present in 72 of 140 cases examined and cysts in 20 cases Menstrual disorders were not related

PULMONARY EMBOLISM A Statistical Investigation of its Incidence in Twelve London Hospitals in the Decade 1925–34 By Robin Pilcher (London) 731 cases of fatal pulmonary embolism are analysed in which the diagnosis was confirmed by autopsy Immobilisation of the patient is regarded as a more important factor than the nature of the illness or trauma There is a definite association between right sided thrombosis and right sided operations and injuries

FIBROMA OF THE KIDNEY WITH CYST By H J Nightingale and S N Lytle (Southampton) Successful removal is reported of a tumour as large as a Rugby football The cyst was probably a late complication caused by obstruction in a thinned out part of the renal tissue

SCLERODERMA SIMULATING CARCINOMA OF THE BREAST By Mark Coleman (London) Two cases are reported The skin changes are localised and well defined and there is no underlying breast tumour Biopsy established the diagnosis

A HITHERTO UNDESCRIBED FRACTURE OF THE PATELLA By D M Meekison (Vancouver) A flake of bone broken off the inferomedial angle of the articular surface of the patella was found at operation in the lateral pouch of the knee joint Three cases are described

PRIMARY SOLITARY DIVERTICULITIS OF THE CÆCUM a report on 3 cases, with a review of 17 recorded cases By M J Bennett-Jones (Bootle) The pre-operative diagnosis is usually appendicitis At operation malignant disease may be suspected The ætiology is discussed

OSTEOPOROSIS MELOLYTICA By J C Leedham Green and F Campbell Golding (London) A case is recorded The symptoms are pain in the back and difficulty in walking The radiogram shows areas of calcium deficiency, the fractures rarely show much displacement, and there is no bending of bones

SALERNITAN SURGERY IN THE TWELFTH CENTURY By George W Corner (Rochester, U S.A.) An historical survey compiled mainly from translations of the Bamberg Surgery and the Surgery of Master Roger

MAMMARY CANCER WITH GENERALISED TELANGIECTATIC CARCINOMA ("CARCINOMA ERYSIPELATOIDES") By E K. Dawson and J J M Shaw (Edinburgh) Trauma (in the case recorded) caused localisation and proliferation of tumour cells in the injured inflamed area There was already an underlying tumour of the breast and visceral metastasis was widespread The clinical resemblance to a primary skin lesion is important

TECHNIQUE OF OPERATION FOR CLEFT PALATE By W E M. Wardill (Newcastle upon Tyne) The author's operation introduces two main principles—deliberate narrowing of the nasopharynx, and the dissection of four short palatal flaps, instead of two long ones, to close the cleft

ANÆSTHESIA FOR HARE LIP AND CLEFT PALATE OPERATIONS ON BABIES By Philip Ayre (Newcastle upon Tyne) The author is convinced that the anæsthetic of choice is oxygen and ether vapour administered intratracheally through a T tube, one limb of which is open to the air

FOREIGN BODIES IN THE URINARY BLADDER WITH A REPORT OF TWO CASES By A W Badenoch (London) and R I Campbell (New South Wales) The cases reported are (*a*) a safety pin in a female bladder, and (*b*) a leather boot lace in a male bladder The mode of introduction, diagnosis, and treatment of such foreign bodies are discussed

RENAL EXTRAVASATION AND REFLUX By A R C Higham (London) The experimental evidence is examined The radiograms of a case are described which showed evidence of pyelovenous, tubular, lymphatic, and interstitial backflow

TUMOURS OF THE URINARY BLADDER, WITH DESCRIPTION OF A NEW ENDOSCOPIC TECHNIQUE By Terence Millin (London) Using a constant irrigating operating cystoscope of convex sheath pattern, the author resects by means of a rigid loop electrode

ANEURYSM OF THE INNOMINATE ARTERY TREATED BY SURGERY report of 3 cases and records of 22 cases collected from the literature By Frank Rundle (London) Excision was carried out in two of the cases, and ligature of the innominate, common carotid, and subclavian arteries in the third There were two recoveries

TREATMENT OF PROSTATIC OBSTRUCTION OTHER THAN BY ENUCLEATION By Hugh Lett (London) A critical review of the alternatives—perurethral resection, hormone therapy, and vasoligation

LESIONS IN A RABBIT'S LIVER AND SPLEEN FOLLOWING AN INTRAVENOUS INJECTION OF THOROTRAST By Harold Burrows (London) The result in the experimental animal, which died with multiple hæmorrhagic lesions, suggests that the use of thorium dioxide for hepatosplenography may not be without danger

INTESTINAL STRANGULATION By G C Knight (Royal College of Surgeons, England) The relief of strangulation kills experimental animals who are in poor condition Depressor substances are present in the peritoneal fluid and in the gut blood in human cases of intestinal strangulation Therefore it may be found that resection in some cases will give better results than simple relief of strangulation

The issue also contains short reports on rare cases

THE LANCET

LONDON SATURDAY, AUGUST 14 1937

PUERPERAL FEVER CONTRACTED IN HOSPITAL

ON the uncomfortable allegations and evidence in the Ashby de la Zouch hospital case, set out at length on another page our readers can be left to form their own conclusions. Mrs. HEAFIELD now crippled after an attack of puerperal fever contracted in the hospital has been awarded substantial damages against the chairman of the management committee (sued in a representative capacity) and against her own medical attendant. Only a year ago in Mrs MARSHALL's action against the local authority responsible for the Cleethorpes Maternity Home there was a similarly successful claim for damages by a patient who had been admitted to a place where—unknown to herself her husband or her medical adviser but known to others—there had been puerperal infection. When giving judgment for Mrs Heafield at the end of July Mr Justice SINGLETON recalled that the Ashby de la Zouch maternity unit could claim a record of 650 confinements without losing a mother. Yet he naturally felt obliged to suggest that if these disquieting conditions can be alleged it will scarcely encourage women to go into hospitals for their confinements. Mrs Heafield he bluntly said would have been far safer at home.

Mrs Heafield's case is likely to be reviewed in the Court of Appeal. If we refer to it here meanwhile we do so not so much to challenge or extenuate the judge's conclusions as to suggest certain rather obvious questions which the managers and officers of other maternity hospitals may now be asking themselves. To begin with the mere letter of the law is every medical practitioner aware of his statutory duty under the Public Health Act regulations of 1926 to notify forthwith on the prescribed form as soon as he becomes aware that a woman whom he is professionally attending is suffering from puerperal pyrexia? Do all doctors realise that puerperal pyrexia means any febrile condition (other than a condition notifiable as puerperal fever) occurring in a woman within 21 days after childbirth or miscarriage in which a temperature of 100·4 Fahrenheit or more has been sustained during a period of 24 hours or has recurred during that period"? To obey the regulations is only one of many obligations. Where as at the Ashby-de la Zouch hospital there are several doctors independently treating their private patients in a general ward what steps are taken to warn one doctor that the patient of another doctor is suspected of puerperal infection? Is it certain that the matron knows when a case has been notified? And does she then warn the other doctors who have or are about to have patients in the same maternity block? Or does she keep silence, waiting for the notifying doctor to tell her to give the warning? In the case both of Mrs Marshall and of Mrs Heafield an element in the allegations of negligence was the omission to inform the husband of the true position. Mr Marshall said that if he had known of the infection in the Cleethorpes Home, he would certainly not have allowed his wife to enter it. Mr Heafield declared that if he had been informed earlier of the nature of his wife's illness he would certainly have insisted upon a second opinion at once. Hospitals will have to bear in mind this essential duty of disclosure. In Mrs Marshall's proceedings her medical adviser who had not been told of the existence of infection in the Home said emphatically that if he had been informed he could at least have insisted that no one who had been in contact with the infected case should be allowed to take part in nursing his patient. Then there is the duty to take swabs. One of the allegations of negligence brought by Mrs Marshall was the failure to take swabs from the whole staff when infection was present, this was the omission of a precaution which might have eliminated the risk of a carrier. At the recent trial of Mrs Heafield's action one of the medical witnesses called for the defence agreed that swabs ought to have been taken in the early stages a positive result might have saved much suffering. Of the normal precautions of sterilised clothing masks and gloves there should be no need to speak though considerable time was devoted in Heafield *v* Crane and Hart to questions of the proper practice. Are these precautions insisted upon as a matter of routine in all our hospitals or are they still omitted in some places unless the doctor gives some special direction for their use? Other points which seem to have impressed Mr Justice Singleton are that at the Ashby-de la Zouch hospital the staff spoke as if they had no instructions that the need of isolating an infectious patient apparently did not occur to anybody and that the matron seemed to wait too inelastically for orders from the doctor. If said the judge a position of danger arises and the doctor does not communicate with her she must get into touch with him and must take steps for the protection of the patients in the hospital of which she is matron.

Among minor matters of comment the judge regretted that the doctors did not keep fuller records of their cases and their visits. He left no doubt of his condemnation of the foolish entry of tendentious matter in a hospital report long after the date to which the entry was deemed to refer. The interpolated words purported to support the suggestion that Mrs Heafield was already suffering from a cold when admitted to hospital. As soon as it was elicited that the entry was a subsequent interpolation the incident (which may charitably be ascribed to a misguided sense of loyalty on the part of the staff towards the hospital) was seen to damage the contention which it was intended to fortify. For the rest if our readers study the account of Mrs Heafield's successful claim they will find their own opportunities for comparing what was done or left undone with the best modern practice of hospital hygiene and administration ? The trial is over The crippled plaintiff would sooner have the health which she has lost than a heavy award of damages Money cannot compensate her The essential task now is for all hospitals and maternity homes to take such steps as will prevent the recurrence of any similar verdict They have had two impressive warnings in a twelvemonth

THE RÔLE OF THE ARTERY

How the blood flows remains one of the most fascinating problems in physiology Harvey's genius solved the main principle so completely as to postpone to our own generation the inquiry into the lesser difficulties, and there are still many points on which sages differ Recent work suggests that the basic cardiac output is a body constant which is maintained almost at any cost The combination of cardiac output and peripheral resistance constitutes the blood pressure The heart, the arteries, and the arterioles are supplied by the autonomic nerves The capillaries, which are not under nervous control, can contract independently, and they dilate in response to the "H" substance of Lewis (1928)

It is now generally held that with a normal cardiac output the blood pressure is maintained by the arterioles, and that variations in blood pressure are effected by the autonomic nerves Whether this is the whole story is doubtful Certainly in conditions of sympathetic overactivity, such as Graves's disease or following the injection of adrenaline, no rise in the diastolic pressure occurs comparable to that of essential hypertension In fact the diastolic pressure usually changes but little It may be that a chemical agent is responsible for the basic pressure, and that the sympathetic nerves only effect those quick changes in pressure as are required by alterations in the environment The discovery of such an agent would throw light upon the curious problem of hypertension The blood pressure falls in some conditions associated with acute weakness of the left ventricle Thus a fall occurs in the early stages of a coronary thrombosis, in diphtheritic myocarditis, in some cases of paroxysmal tachycardia where the rapid cardiac action and the shortened diastole cause weakness of beat, and sometimes in hypertension with the onset of failure with congestion But here too the issues are not altogether clear In diphtheria there is evidence that this drop in the blood pressure is accompanied by signs of stagnation of the blood in the capillary zone—a form of peripheral failure which may aggravate the cardiac weakness by reason of the diminished venous return A large element of shock may also be present during the initial phase of a coronary thrombosis, although the fall in pressure is probably beneficial In paroxysmal tachycardia the cardiac output is known to fall In only a small proportion of patients with hypertension does the pressure fall materially with the onset of failure In these one must suppose that the labouring heart is unable longer to keep up the output, and that the drop in pressure is of central origin

The function of the large elastic arteries is to receive the blood ejected by the heart during systole, and to convert the intermittent cardiac output into a constant capillary flow The muscular arteries, through the agency of the autonomic nerves, distribute the blood in accordance with the requirements of the different organs According to Lewis (1928) a fine control is effected by the capillaries, which by their contraction prevent more blood from passing than is needed It has often been suggested, and recently by Wybauw,[1] that the arteries possess powers of rhythmical contraction Normally their rhythms would be dominated by the superior rhythm of the cardiac centres, but though latent it is claimed to be present in a similar manner to that of the auriculoventricular node The evidence for this view is derived mainly from the secondary pre anacrotic and dicrotic waves which can be seen in pulse tracings, and have been held to be due to independent contractions of the arterial wall In his Lumleian lectures, publication of which is completed in our present issue, Dr Crighton Bramwell considers this problem as it concerns the pulse He shows that all secondary pulse waves can be reproduced and studied in a water-filled tyre Pre anacrotic and dicrotic waves are actually caused by daughter waves of the main wave, and are comparable to the breakers of the incoming tide On the seashore the steeper the wave the more imposing is the crash as it breaks, and the larger are the daughter waves into which it divides In the case of the pulse-wave the steepness of the wave depends upon the stroke volume of the ventricle and the rate of ejection of its contents Thus secondary waves are prominent in free aortic regurgitation with a low diastolic pressure To the steepness of the wave, too, is due the water-hammer pulse of aortic regurgitation This is found to a less degree in hyperthyroidism and profound anæmia, in which the rate of ejection is also quick To the same factor can be ascribed the third phase of the loud cracking sounds described by Korotkow when the artery is compressed by the sphygmomanometer armlet Secondary waves were found to disappear when the fourth phase of muffled sounds ensued, and there was a close correlation between the diastolic pressure obtained by observing the point at which these sounds went and that obtained by auscultation. The fact that sounds may persist down to zero in aortic regurgitation, and sometimes in hyperthyroidism, is explained by the fact that in these conditions the pulse wave is naturally steep, without the intervention of the compressing armlet, the persisting sounds have a similar basis to the water hammer pulse Steep waves also cause loud sounds Thus the Korotkow sounds are loud in aortic regurgitation and faint in aortic stenosis

The evidence against rhythmic arterial contractions thus seems to be considerably more cogent than that in its favour In addition Dr BRAMWELL'S work offers a ready and acceptable explanation for some features in blood pressure readings which have hitherto seemed rather mysterious

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[1] Wybauw R *Scalpel* April 17th 1937, p 486

CONFLICTING PICTURES

Dr H G DAIN, who conducted the case for the British Medical Association at the court of inquiry last May, described himself at the Belfast annual meeting of the Association as a disappointed man. He was referring in the first instance to his failure to convince the court of the need for an increase in the capitation fee But apart from this failure he was distressed at what he felt was the distorted picture of insurance practice given by officers of the Ministry of Health The evidence of the two regional medical officers if it was taken to reflect actual conditions in practice was, he said most damaging to the profession s case The idea of the Ministry seemed to be to depreciate the service which insurance practitioners rendered in order that the Ministry might secure it at the cheapest possible price On another page we set out the two pictures given on the one hand by medical officers of the Ministry formerly in insurance practice and on the other by Dr D G GREENFIELD, who was called with the permission of the chairman to present to the court the experience of a doctor actually in insurance practice now Dr GREENFIELD s evidence was given impromptu What he said was his immediate reaction to what had gone before and no doubt with more time to consider in detail the arguments of the regional medical officers it would have been easier to combat them effectively To take only a few examples the so-called "most modern treatment" for gastric ulcer by injection of histidine had already fallen into disuse by the time the evidence was given, and this may apply to some of the other unspecified methods which are held to have lessened the practitioner's work The experience of Dr MACKENNA that antenatal examination is seldom called for by insured persons, or that of Dr HARVEY that this is done by doctors at clinics can hardly survive the Midwives Act of 1936 Dr GREENFIELD'S evidence of increase of time spent in surgery hours is impressive his most cogent point however was that for certain pathological conditions such as varicose veins whereas it was formerly the custom to ring the changes by ordering certain lines of treatment without applying any of these personally, now the whole of the treatment must be carried out by the practitioner himself He contested the alleged rarity of cases of severe anæmia and diabetes, pointing out that many patients who would formerly have died within a year or two of the onset of their disease would now remain under treatment for many years It would be instructive to learn the experience of doctors in other types of practice

ANNOTATIONS

LONDON SCHOOL CHILDREN

IN his annual report as school medical officer for the county of London Sir Frederick Menzies welcomes the new wave of interest and the fresh urge with regard to the children s health which has expressed itself in anxious concern for their nutritional well being for the progress of physical culture and for improvement in environmental conditions both in and out of school. What the environment would be like if the Council for Art and Industry had its way is strikingly illustrated in the school designed for this council by Mr Oliver Hill, F R.I.B.A. All class work is done at first-floor level for relief from noise The south aspect on which the class rooms are found, consists entirely of windows opening on to a balcony Staircases are replaced by gently sloping ramps Besides the scholastic equipment there are milk dispensaries and lifts spray and foot baths drying rooms and covered playgrounds and two rest-rooms adjoining a medical inspection room with bath and waiting room. Careful clinical assessment at routine inspections assisted by continuous growth charts, has codified the nutrition of 184,733 children as excellent 17 normal 77 subnormal 5 0 pathological 0·07 per cent These figures, very similar to those of last year tend to be better in those who have been longer in school The total number of children receiving milk from one source or other was estimated to be 315 000 The 11 nutrition centres are becoming loci of intensive study such as the photometric investigation of vitamin A deficiency Although at the outset intended to be places of study and advice only the physicians in charge of these centres have felt the need to prescribe when special deficiencies were diagnosed The practice has therefore grown up of administering various inexpensive vitamin concentrates and in cases of nutritional anæmia a simple iron preparation Dr L. W Batten finds that in Paddington environment and way of life are more important causes of malnutrition than food In Wapping Dr A. C. M Elman ascribes much of the trouble to deplorable housing—the economic factor is of great importance Unlike Dr Batten he finds secondary (nutritional) anæmia common The habitual posture of the children gives an important indication of the prevailing physical fitness and tone as well as of the efficacy of the physical education and Dr Batten has made an attempt to grade the various conditions in a group of 674 children of various ages at 8 elementary schools with results that are a good deal better than some of us would have feared Posture on the whole is better in those about to leave school than in the entrants The organisers of physical education cite the need for a wide variety of movements performed with a rhythmical swing to obtain reasonably supple bodies Many abdominal exercises have been included in the syllabus It is essential for the teacher to see the body of the child on which he is working and one of the problems for the future is to provide the necessary shoes and clothing Still one of the greatest causes of unfitness and invalidity is rheumatism. The scheme under Dr C E Thornton is providing prolonged rest and care in the early stages with a view of minimising the risk of permanent cardiac crippling. Accommodation for rheumatism and chorea is provided at Queen Mary s Carshalton High Wood Hospital, the Downs Hospital near Sutton, the Lower Southern Hospital and Norwood Children s Hospital 910 beds in all which proved on the average just adequate for the needs While the children are away care committees inquire into their home conditions Onset of cardiac damage is unfortunately so insidious that some evidence of involvement was already present in 38 per cent of cases on admission The results on discharge in 1900 cases were in per centages Fit for ordinary school or any job, 79, fit for special P D schools, 12, fit for light work only, 6, unfit for any school or work, 3 Many indications suggest that without the provisions of this scheme the number of cardiac cripples would have been much greater

AIR EMBOLISM AFTER ABORTION

THE question of death from air embolism, which comes up periodically for debate and seldom elicits a decisive answer, has been reopened in Canada by Coles, Richardson, and Hall.[1] Noting the number of deaths attributed to air embolism following criminal abortion they have carried out experiments to find how much air must be admitted into the circulation to kill an animal They found, as did Joannides and Tsoulos[2] in 1930 and Harkins and Harmon[3] in 1934, that the amount was surprisingly large, being 6–8 c cm per kg of body weight in dogs, and they estimate that according to this it should take about 480 c cm to kill a human being They are therefore sceptical about air embolism as a cause of death in the abortion cases, and they suggest what they think may be a more likely cause In procuring abortion vaginal douches containing chemical substances are commonly used, and they point out that if it is possible for air to enter the uterine sinuses by aspiration it must also be possible for fluid to enter and cause death by poisoning They investigated the toxicity of some of the fluids commonly used, including commercial phenol preparations, sodium and potassium soaps, potassium permanganate, and bichloride of mercury when injected intravenously into rabbits and they found that these, particularly the soaps, were fatal in much smaller quantities than was air They suggest therefore that in cases of death following criminal abortion, which show air in the heart and veins post mortem, some possible cause of death other than the air should be considered Such cases always present difficulties, especially as there is usually infection, and often infection with gas forming organisms which are themselves capable of producing in the veins an appearance not unlike that seen with air embolism

TOXIC EFFECTS OF VASOPRESSIN IN ANIMALS

ATTEMPTS to relate the eclamptic toxæmias of pregnancy to overactivity of the posterior lobe of the pituitary have so far met with very little success One of the most obvious ways of testing the hypothesis is to attempt to reproduce the symptoms and lesions of eclampsia in animals by injecting vasopressin Some years ago Fauvet[4] claimed to have done so, but Ohligmacher[5] was unable to confirm his findings In an attempt to decide the question Dr Byrom[6] has been re examining the effect of vasopressin on rats He reports that if large enough doses of the hormone are injected gross lesions appear in various tissues The most striking changes are found in the kidneys About half an hour after an injection of 40 units of vasopressin these organs display large irregular areas of pallor, which later acquire the characters of anæmic arterial infarcts and are clearly due to spasm of isolated branches of the renal arteries When smaller doses are given repeatedly for several days, a less intense and more diffuse kind of lesion is found, presumably of similar origin, which is characterised by albuminous, dropsical, or fatty degeneration of the convoluted tubules, with little or no necrosis—an appearance closely resembling the changes found in eclampsia Eclampsia is also suggested by the occasional appearance in the liver of focal necroses, which, however, lack certain features seen in eclampsia, and by the fact that in pregnant rats vasopressin causes death and maceration of the fœtuses The parallel seems to lend some colour to the view that eclamptic lesions are expressions of vascular spasm The dose needed to cause such lesions in animals, however, is so extremely large that Byrom finds it hard to believe that the spasm of eclampsia can be due to simple oversecretion of vasopressin, and he suggests that, if spasm is indeed concerned, it is perhaps, at least partly, due to some unknown factor that renders the vessels hyper sensitive to pressor agents

Apart from those mentioned above, Byrom describes other lesions that can be provoked by vasopressin Large doses repeated at short intervals are followed by gross arterial lesions, especially in the kidney, which bear close comparison with the "necrotising arteritis" found in several human diseases, notably malignant hypertension Focal glomerular necroses and intense hyaline-droplet degeneration of the renal tubules, also suggestive of malignant hypertension, are also occasionally found, and exceedingly large doses may give rise to the appearance of massive cortical necrosis of the kidney It is interesting and possibly significant that both cortical necrosis and malignant hypertension are, like eclampsia, related ætiologically to pregnancy

BEHAVIOUR AFTER EXTIRPATION OF FRONTAL LOBES

A PATIENT and detailed study of the behaviour and psychological changes in a man who had been operated upon for the removal of both frontal lobes for an extensive tumour has been made by Prof R M Brickner[1] It was concluded that no residual neoplasm having any neurological effects was likely to have remained behind The method of observation was a day to day account of the life of the patient Before the operation he was a normal man of business, 35 years of age, married, of equable temper, and of good intellectual capacity The observations recorded in this minute study indicate not only a diminution of restraint, which one might expect from the removal of the inhibitory mechanisms which reside in the cortex, but the emergence of a pattern of behaviour which was a strange mixture of adult vocabulary, childish impulses, and self feeling He became a braggart in word but not in deed, and although there was a marked tendency towards aggressive reactions, these were mainly expressed in words and rarely went beyond a certain measure of half restrained horseplay Childish forms of behaviour were illustrated by the free use of neologisms derived from infantile expressions and jokes, and a facetious display of an adolescent type His sexual life would appear previously to have been uneventful he now indulged in innuendoes suggesting the resurgence of sexual tendencies. In regard to mental synthesis he now showed an inability to deal with complex situations, born largely of a tendency to digression and to flight of ideas. There does not appear to have been any gross break-down in his power of synthesis. His difficulty in isolating mental elements for the purpose of concentrating on a situation or segregating, as Prof. Brickner calls it, appears to be due to a hypomanic tendency rather than to destruction of intellectual processes. Mental tests indicated an appreciable intellectual impairment, giving an intelligence quotient of 80 on the Terman test and a lower quotient still on performance tests. In the language of engrammic psychology it might be said that while individual engrams remained intact there was a distinct loss of the power to integrate them into larger engrammic patterns which the highest forms of mental synthesis require. Hughlings Jackson's dictum of dissolution seems to be corroborated in this case and the partial dissolution of purposefulness fits in with the thesis put forward by Goldstein and Schilder. Unilateral lesions of the frontal association areas do not produce anything like the same deterioration in mental function.

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[1] Coles B C Richardson H F and Hall G E *Canad med Ass J* July 1937 p 24 Richardson H F Coles B C and Hall, G E *Ibid* 1937, 36 584

[2] Joannides M and Tsoulos G D *Arch Surg* 1930 21 333

[3] Harkins H N and Harmon P H *Proc Soc exp Biol* N Y 1934 32 178

[4] Fauvet E. *Klin Wschr* 1931 10 2125

[5] Ohligmacher H *Ibid* 1933 12 1404

[6] Byrom F B *J Path Bact* 1937 45, 1

[1] The Intellectual Functions of the Frontal Lobes By Richard M Brickner B S M D Assistant Professor of Neurology College of Physicians and Surgeons, Attending Neurologist Neurological Institute New York London Macmillan and Co Pp 354 15s

This valuable study goes to confirm the fact that no adequate tests are yet available for the study of mental synthesis on the higher levels. For in this case the mood changes which have followed the operation illustrate that effective factors, hitherto held in check, play no mean part in the lowered capacity for synthesis and segregation. The book is therefore not only of value as a detailed study of a lobectomised subject, but it brings out the fact that tests remain still to be devised for estimating the significance of the frontal lobes as a special region in the implementing of the intellectual life.

EXTRAPLEURAL PNEUMOTHORAX

THERE have been many developments in collapse therapy of the diseased lung in cases of phthisis since the inception of the artificial pneumothorax many years ago. At first it was the aim of the phthisiologist to obtain a complete collapse of the lung no matter how restricted in extent was the lesion; in this he was often defeated by an adhering pleura too often over that very part of the lung that he wished to free. Phrenic avulsion and internal pneumolysis assisted in converting an inadequate pneumothorax into a satisfactory collapse. What the artificial pneumothorax was able to accomplish in the acute early case the thoracoplasty was devised to imitate for the fibrotic cavernous lesion of chronic phthisis; to obtain on the radiogram a narrow slit between the lateral thoracic wall and the mediastinum from apex to base was the ambition of the thoracic surgeon. The introduction of the bilateral pneumothorax opened the eyes of the physician to the possibility of selective collapse. The physiological requirements of respiration would not permit of anything approaching a complete collapse of both lungs, but it became apparent that the diseased apex displayed a greater tendency to relax than the healthy lower lobes. Selective collapse in unilateral cases was regarded as a fluke incapable of exact control, until Maurer succeeded in fixing the pleuræ at will with 50 per cent. glucose solution. The thoracic surgeon was not long behind the physician in applying the principle of selective collapse. The apical thoracoplasty was substituted for the complete paravertebral thoracoplasty of Sauerbruch, while apicolysis with paraffin plombage has been in use for over 20 years. In this last operation wax has enjoyed the longest vogue of any substance as a medium to maintain the collapse, as it can be easily moulded to fit the confines of the dead space; but it has the drawback of being a foreign body and is treated as such, being eventually extruded piecemeal by the host. It enjoyed popularity for a time as its limited rib resection entailed little shock to an ill or emaciated patient, but the end results were often unsatisfactory, inelegant, and in many cases positively harmful. Gravesen therefore devised the partial thoracoplasty combined with apicolysis. The parietal pleura was stripped and the apex of the lung drawn down; this was followed by an upper 4 or 5 rib thoracoplasty. The immediate partial collapse was excellent, but there was a tendency for the lung to re-expand, in some cases allowing the cavity to reopen. The final contribution towards attaining a selective concentric collapse by surgical means was the thoracoplasty with extrafascial apicolysis by Semb and Holst.

Despite the advance in the technique of the surgical approach to pulmonary tuberculosis there still exists a big gap between the relatively benign artificial pneumothorax with its satellite operations and the major operation of thoracoplasty—an irrevocable procedure attended by risk of shock, hæmorrhage, and infection. Moreover, there is a group of cases with moderately early disease in which an artificial pneumothorax is a mechanical impossibility and for which, because the disease is still active and unstabilised, thoracoplasty is unsuitable. It is the patients of this group that will benefit from an extrapleural pneumothorax described on p. 377 by Dr. Brian Rhodes. As a method of obtaining collapse it is not original, but it has recently been revived on the continent by Graf and Schmidt. Dr. Rhodes gives an eye witness's account of the procedure as he has seen it performed in these two clinics at Coswig and Heidelberg. The pneumothorax is induced with local anæsthetic with the patient sitting. A short length of the third rib is resected through a paravertebral incision and the corresponding intercostal nerve divided. The parietal pleura is identified and is gently separated from the endothoracic fascia with the finger tips or a blunted holder. Pneumolysis can be carried as far as is desired over the cupola of the lung and down over the mediastinal surface to the root. This last manœuvre is important if selective concentric collapse is to be achieved. The stripping is performed under direct vision with the aid of a small lamp within the chest and any bleeding (and there appears to be very little) can be swiftly controlled. Once the lung has been freed there are two courses open to the operator: either to sew up tightly so as to make the dead space airworthy or to leave in the wound a small catheter attached to a manometer so as to maintain a zero pressure for 24–30 hours. On general principles the first method seems the wiser as it reduces the risk of infection. Moreover, an effusion of blood and serum to excess can be easily aspirated and replaced with air in the usual way. It would perhaps be prudent to have a pneumothorax needle ready at hand should a spontaneous pneumothorax occur, although according to Dr. Rhodes this is a rare event. Once the induction has been accomplished the extrapleural pneumothorax is maintained along lines exactly similar to the intrapleural pneumothorax. The manometric readings show less variation in inspiration and expiration, and the amount of air required at each refill is less, being seldom more than 200 c.cm. Should obliterative pleurisy occur—and this has happened quite often—the pneumothorax can be replaced with an extrapleural oleothorax It is wise, as Dr Rhodes points out, to allow an interval to elapse between the induction of the pneumothorax and its conversion into an oleothorax, to ensure a stiffening of the walls of the space By such means is perforation of lung avoided

Two French observers, with similar opportunities of seeing the German work, have been proving the method at the Hôpital Laennec and several Paris sanatoriums, reaching the same tentative conclusions [1] Because the extrapleural pneumothorax would seem to be a rational method of dealing with a certain group of cases that are denied collapse therapy at the present time, because it is a less drastic and less mutilating procedure than thoracoplasty, and is, in no sense, a permanent collapse, we endorse Dr Rhodes's statement that it is a method deserving of more extended trial

METALLIC SALTS AND HORMONES

SALTS of zinc are known to prolong the action of certain hormones and other potent organic substances such as diphtheria toxin and histamine In our last issue Prof E C Dodds and his co workers showed that the antidiuretic action of posterior pituitary extract is also prolonged by salts of zinc, and still more by salts of cadmium and nickel The mechanism of this prolongation can hardly be a chemical union with substances of such widely varied constitution, it is more likely, he thinks, that the metal alters absorption from the site of injection Investigations into the effect of zinc and allied metals in prolonging insulin hypoglycæmia have been made in the pharmacological laboratory of Boots Pure Drug Co and were reported by E M Bavin and W A Broom at the recent Liverpool meeting of the British Pharmaceutical Congress The mammalian pancreas contains small but definite amounts of zinc and this metal is an essential constituent of crystalline insulin Whereas small concentrations of zinc produce a prolongation of hypoglycæmia, complete inhibition of the normal insulin response results, it seems, if the amount of metal present is increased The prolongation of insulin hypoglycæmia caused by traces of certain metals is thus the initial stage of an inhibitory effect which becomes virtually complete with large concentrations The mechanism of this inhibition is discussed by the authors Neglecting the theory that the metal may produce hyperglycæmia, which in the case of zinc has been negatived, they suggest two possible explanations In the first place, the metal may attach itself to the active groups of the insulin molecule and thus render it incapable of producing its normal response, or the metals in the rather large concentrations used may exert a toxic effect on some stage of carbohydrate metabolism and thus inhibit the course of events which normally follows the injection of insulin The necessity for the presence of zinc in the formation of crystalline insulin and its effect in increasing the action of protamine insulin lend colour to the hypothesis that zinc can combine with the insulin molecule, and hence give support to the first of the above suggestions In such a case, however, it would be expected that, the smaller the atomic weight of the metal used, the smaller would be the concentration necessary to produce inhibition, whereas a greater concentration of magnesium is necessary than is the case with zinc The same authors have confirmed the observation of Bischoff and Gray that tannic acid also prolongs the hypoglycæmic action of insulin and have shown that the addition of zinc to the tannic-acid insulin complex still further prolongs the hypoglycæmia Suspensions of tannic acid, insulin, and zinc with a tannic-acid insulin ratio of 2 to 1 have been shown to produce a hypoglycæmia as prolonged as that produced by suspensions of protamine, insulin, and zinc The evidence certainly encourages a clinical trial of tannic acid and insulin in the ratio of 2 to 1 with the addition of 1 mg of zinc to each 500 units of insulin

SILICOSIS HAZARDS AMONGST METAL POLISHERS

A STUDY of the silicosis hazards of metal polishers is recorded in the *Industrial Bulletin* for June, 1937 (p 227), published by the Industrial Commissioner of New York State Dr Adelaide R Siviter states that tripoli is the only siliceous substance to which polishers are exposed, and that in this industry it is so used, incorporated in a greasy medium, as to reduce materially its dustiness, and that the recent investigations which indicate a slight silicosis risk amongst metal polishers appear quite consistent with the known facts A group of 80 men were examined, of whom 73 had been employed for over 5 years and 43 for over 15 years at metal polishing Out of the whole group "two, or 2 5 per cent, showed silicosis characterised by a fine type of mottling" Neither had worked at any other trade 47 (58 per cent) showed "increased fibrosis" (12 of whom presented evidence of old healed tuberculous nodules) In all 16 per cent of the whole group showed evidence of healed tuberculosis Dr Siviter quotes for comparison a study of dust in a silverware plant, published in a *Public Health Bulletin* (No 208) in 1933, in which 70 per cent of 51 men showed X ray evidence of increased fibrosis It would appear to us more important to inquire into the causes and significance of the high proportion of men showing "increased fibrosis" than to direct attention to the low incidence of frank silicosis in this occupation. It would be of interest to learn what grounds Dr Siviter has for the opinion that the "rather high incidence of increased fibrosis is probably of little clinical significance" Ought not its significance to be related to the figures which she quotes earlier in her paper, where she points out that, according to figures derived from statistics compiled by the Registrar General, the mortality amongst metal polishers from tuberculosis and bronchitis is twice the standard rate for all occupied and retired males?

"SABOTAGE" IN THE BACTERIOLOGICAL LABORATORY

THE careful bacteriologist when he finds some precious subculture which he has laid by with all precautions has become contaminated with moulds must sometimes give way to the thought that some perverse and mischievous agency has been at work Dorothy Pease of the botany laboratory, Columbia University, makes some interesting suggestions [1] as to how this contamination may sometimes come about, ascribing it to the activities of mites such as tyroglyphidæ Some of these mites may feed and breed under the thick mycelium of moulds They will travel from culture to culture carrying conidia and bacteria on the surface of their bodies and leaving them in their wake They can easily invade Petri dishes but they can also find their way through the cotton wool plugs of culture tubes and they have even been found at work in tubes capped with tinfoil tightly bound down by rubber bands Cockroaches and flies which are extensively parasitised by tyroglyphidæ are a potential focus of spread and even the young cockroaches themselves may enter Petri dishes spreading ruin among pure cultures Acarines of the 'wood lice' type are probably of particular importance owing to their great numbers and wide distribution Their imagos are about 0 5 mm. in length, but their three-legged larvæ are so small as to be hardly visible without the aid of a magnifying glass Pease describes how on one occasion in her laboratory mites found their way into a dust-proof cabinet where all the stock cultures were kept and travelled from tube to tube carrying actinomyces and foreign bacteria into most of the tubes According to Puntoni[2] these little pests may be guilty at times of even more dangerous tricks He records an apparent return of virulence in cultures of B C G which was found to be due to a contamination by virulent tubercle bacilli carried from neighbouring culture tubes by mites Possibly the matter is of more moment in warmer climates than ours but when we hear of sabotage in the bacteriological laboratory we should perhaps give a thought to the possibility that mites may be the villains of the piece

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[1] Hautefeuille E and Dreyfus le Foyer *Presse méd* June 9th 1937, p 859

[1] *J Bact* 1937 33 619

TAR OR JUST DUST?

THE dust from tarred roads has frequently been cited as a probable cause of the increase in lung cancers in recent years and reference was made some weeks ago[3] in our columns to the work of Dr J Argyll Campbell which seems to support the idea. Campbell showed that exposing mice to an atmosphere laden with road dust containing 2-3 per cent of tar produced cancer of the skin in a large percentage of the animals which survived sufficiently long and also increased tenfold the incidence of a lung tumour to which they were prone. In order to determine the part played by the tar as distinct from the dust Campbell has repeated his experiments,[4] using the same dust after removal of the tar by benzene As in the previous experiments the mice were exposed at hourly intervals for a year or more to clouds of dust such as arise from dusty roads With the tar free dust no skin tumours were produced, while the incidence of lung tumours was considerably lower than in the previous experiment. Amongst the animals living ten months or over only 45 per cent showed lung tumours with the tar free dust, whereas 74 per cent produced them when tar was present. This would seem to indicate that tar may be an important factor in the development of lung cancer but it should be noted that the mice used in these experiments were naturally liable to develop lung tumours sometimes as many as 20 per cent of the controls showing them In this respect the experiments are perhaps not very striking but Campbell has pointed out that the tar laden dust not only increased the numbers of mice affected but increased the numbers of tumours in individual mice and in addition produced malignant changes in a considerable number Three of his mice showed metastases in liver or kidneys His experiments seem to show clearly enough that inhaled tar may act as a carcinogenic agent in the lungs and he is a convinced supporter of the road-dust theory A final conclusion in this problem is however difficult to arrive at for as several writers have shown lung tumours seem to be increasing appreciably in countries where there are few tarred roads, so that if tar is a contributing factor it is presumably not an essential one. There are indeed a number of authorities who have yet to be convinced that the apparent increase in these tumours is a real one

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[2] *Bull e. Att. I Accad. Med Roma*, 1931 57 300

[3] *Lancet* 1937 1, 1291

[4] *Brit J exp Path* 1937 18 15

PERMANENT DIABETES INDUCED BY HORMONE INJECTIONS

DR F G YOUNG, whose clear exposition of the complex subject of carbohydrate metabolism was published in our columns last year,[1] has since joined the staff of the National Institute for Medical Research at Hampstead He has continued there experiments on the relation of the pituitary gland to carbohydrate metabolism and reports on p 372 an important new fact. Several observers have maintained that the administration of anterior pituitary extracts to animals may lead to the appearance of symptoms of diabetes mellitus but these have only been transitory Dr Young has managed as a result of the daily injection in large doses of extract freshly prepared from the anterior pituitary gland of the ox, to induce a permanent diabetic condition in two dogs This is the first time that a permanent diabetic condition has been produced experimentally without surgical interference with the pancreas The diabetes produced in this manner differed from that of depancreatised dogs in that the dogs injected with pituitary extract appear to be able to survive indefinitely without insulin in a vigorous condition one of them did not lose weight One of the animals treated experimentally with insulin required 60 units (4·4 units per kilogramme of body weight) daily to keep the urine almost free from glucose on a normal diet Dr Young is now investigating the nature of the differences between depancreatised dogs and those subjected to injections of pituitary extract The condition of the islets of Langerhans in the latter is being examined and the question whether the insulin requirements of these animals is significantly greater in that of depancreatised dogs is being ascertained by direct comparison under similar conditions

INDEX TO "THE LANCET" VOL I 1937

THE Index and Title-page of Vol. I 1937 which was completed with the issue of June 26th, is now ready A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET 7 Adam-street, Adelphi, W C 2 Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now

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[1] *Lancet*, 1936 2 237 and 297

NEW MATERNITY CENTRE AT WESTMINSTER.—The new maternity and child welfare centre and day nursery situated at the corner of Bessborough-street and Lupus-street Westminster will be finished and opened in the early autumn The basements include a laundry and perambulator store On the ground floor which is to be administered by the health committee of the city council are rooms for a medical officer and health visitors weighing and demonstration rooms and accommodation for an antenatal clinic In the corner of the waiting room is a separate room for babies suspected of suffering from infectious disease The first second and top floors are to be rented by the Westminster day nursery committee and will have sun rooms and wards where mothers attending hospitals for in patient treatment or actresses temporarily out of London may leave their children

PANEL AND CONTRACT PRACTICE

INSURANCE PRACTICE TO-DAY

TWO DIFFERENT PICTURES

THE court of inquiry held at the end of May to consider the capitation fee payable to medical practitioners under the National Health Insurance scheme was asked to take into consideration the nature of the services rendered to insurance patients The Ministry of Health therefore invited two of its regional medical officers to give evidence in what way recent advances in medicine had affected the scope and quality of insurance practice Dr D L Mackenna spoke from his own experience of a large mixed practice in the West of England and Dr F J Harvey also from his personal experience with a mixed suburban type of practice After they had spoken Dr H Guy Dain said that he would like to counter the picture of insurance practice which they had given, and with the permission of the chairman called Dr D G Greenfield to present to the court the experience of a doctor actually in insurance practice now By the courtesy of the British Medical Association we are able to give the contrasting pictures of insurance practice in the actual words in which the speakers addressed the court The account is taken by permission from the shorthand notes of Messrs G Moore and Co , 38, Parliament street, London

DR. MACKENNA

I have been asked, as one who was in practice for a number of years, to come up and state whether, in my opinion, the recent advancements in medicine have added to or decreased the work of the panel practitioner I was in practice in a large mixed practice in the West Midlands of England, and I had a panel of 1800 approximately That formed less than one third of my total practice The class of patient I had was the collier and steel worker, with a large number of farm labourers It was situated 17 miles from the nearest general hospital. I have heard all the evidence of the British Medical Association, and their memorandum has been handed to me for my comments Of course it is understood that I can only deal with the medical points raised. I would say also that I have been, apart from the years of the war, in practice for 24 years, that period terminating during 1934, and I joined the regional medical staff of the Ministry of Health in 1935

Up to that time, when a patient came to me I asked myself the question How does this man differ from the normal individual? and I decided that question by the ordinary physical examination which was open to me It was only in prolonged obscure cases that I had to send the patient to hospital for advanced methods of diagnosis There are very few general practitioners who have the skill or the apparatus which is necessary for these more modern and advanced methods Very few doctors have the apparatus, and if they have the apparatus, unless they are doing these special investigations constantly and regularly, the opinions that they form from their readings are not accurate, to my mind, and it seems a waste of time for a general practitioner to embark upon them

It has been suggested by the Insurance Acts Committee that there has been a considerable increase in the number of persons who come to consult their doctor or to ask advice as to how to keep well. It might be called preventive medicine It was my experience in practice that it seldom or never happened, and in the whole 24 years I was in practice, I can only remember three healthy people coming to me and asking for such advice Certainly boys and girls between the ages of 14 and 16, when they are getting away from their mothers' apron strings, never came and asked for advice, they only came to see me when they were ill The same thing applied to the ordinary adult population

Of course it has always been the duty of a practitioner to advise in the early stages of disease, in order that a more serious condition might be prevented from arising But the necessity for that, I am perfectly confident, is no more to day than it was in 1924 The Insurance Acts Committee state that there has been an improvement in and an elaboration of method in diagnosis and treatment No one is going to deny that at all, we all know it, but I maintain that these methods of diagnosis are mainly confined *to the domain of the specialist and do not concern the* general practitioner and do not add to his work. I also maintain that these methods of diagnosis and treatment not only reduce the work of the doctor, but they also reduce his responsibility

The Insurance Acts Committee instanced the case of the diagnosis and treatment of pernicious anæmia I would say that in the average practice, and certainly in mine—and I think mine was typical of the average type of practice—the number of cases of pernicious anæmia which any doctor is called upon to treat is very very small In 24 years' practice I can only remember having to treat six cases Now the proper diagnosis of pernicious anæmia can only be done efficiently, in my opinion, by one who possesses the necessary apparatus and skill. As far as the panel patient is concerned, the diagnosis as a general rule is carried out in hospital, where there is a specialist *who does practically nothing else but these scientific* investigations In the old days, before these methods were introduced, the general practitioner would go on treating these cases, but had no means of definitely making up his mind whether it was a case of pernicious anæmia or not, he had to go on seeing that patient week after week, whereas now, as soon as he suspects a case—provided he has the interest of his patient at heart, which we know that all doctors have—he immediately sends that patient to hospital for a definite diagnosis, and the specialist sends back to the doctor a report He advises the doctor how to treat that patient, the exact amount of dosage of Liveroid, and the responsibility for the treatment and the supervision of the patient to a large extent is taken out of the hands of the general practitioner Periodically the general practitioner has to send the patient back for a blood count, and on the report of the specialist the dosage of liveroid is either increased or decreased So, apart from writing the prescription, or, unless he adopts the method which I did of giving it by injection, he has only got the trouble of writing a prescription

The British Medical Association has said that many of these modern methods are laborious If the treatment entails a hypodermic injection, I do not think there is much labour about it, certainly not in a properly regulated practice, because it should not take long to give the treatment These cases of pernicious anæmia, by means of the modern method of treatment, get better I have cases of patients in my memory who were very very ill when I was first called in but made a fairly rapid recovery and they are working to day with only an occasional visit to the hospital to have the blood examined. The same thing applies to the treatment of simple anæmia. When I started in practice in 1910 in a large industrial centre I had a great many cases of what was then called simple anæmia, and they used to come week after week. Nowadays anæmias are differentiated one from the other by means of a specialist who examines them and informs the doctor of the exact diagnosis. The ordinary simple anæmia is now cured very rapidly by massive doses of iron and this lessens the work of the practitioner.

The question of gastric ulcers has been raised. I think a good deal of the alleged increase is simply due to the fact that there are better means of diagnosis. As Dr Paterson has said, in the early days the doctors were crowded out with patients suffering from dyspepsia and the doctors had no means of telling definitely whether the man had a gastric ulcer or not. By using the X ray the diagnosis can be made definitely, and efficient treatment can be carried out at a much earlier date. If it is decided that the treatment should be surgical, then, owing to the improved technique in the operation, it is my experience that patients operated on in recent years have fewer sequelæ than those patients who were operated on for a similar condition 10 to 15 years ago. I have had patients who have had the operation, and it was very marked that in recent years the sequelæ were fewer. The most modern treatment by the injection of histidine I have no experience of at all, but I have been informed by a specialist that by the adoption of this method the duration of the condition is shortened and the patient gets back to work very rapidly and, with an annual overhaul, can be kept well. I am perfectly certain that the modern methods of treatment have definitely lessened the work of the practitioner.

As regards the cases of neurosis which the B.M.A. mentions, I cannot speak of that type of neurosis. In my practice the peak of the neurosis was just after the war, about 1922 or 1923, and it never impressed me that in the later years of my practice there was any notable increase. But I agree that the treatment of the serious cases of neurosis is not the work of the general practitioner. He has not the time or the knowledge. The treatment of those cases is definitely that of the specialist.

Dr Paterson has dealt with the question of the sphygmomanometer. The Insurance Acts Committee suggest that this is a new instrument which has come into being since 1924, but I have been using it ever since the war in my practice, wherever I considered it necessary, and it does not take up much time.

As to sera and vaccines, I take it that the B.M.A. also claim there has been a big increase in the use of these in 1936 compared with 1924. I disagree with that. In my experience—and I think it is pretty generally accepted—vaccines are not used so frequently now as they were in 1924. It was a fashionable thing in 1924 to use a vaccine for everything, but from experience it was found, I think—and it certainly was my experience—that the results obtained were not nearly so good as were expected. In fact I finally gave up the use of vaccines in most cases. But if they are used, surely they are used to get the patient better quicker than by ordinary medicinal means. If they effect the purpose for which they are intended, surely it must mean that the doctor has less work to do in those particular cases. Otherwise why use them? The same thing applies to the sclerosing methods in the treatment of varicose veins. Here I think the doctors will admit that the results are astonishingly good and patients get better much more quickly than under the old treatment, and with less time taken in treating that particular type of disease.

Then as to the use of other dressings—elastic adhesive dressing and oxide of zinc strapping—they certainly relieve the doctor of frequent dressings and facilitate the recovery of the patient.

As to the collection of materials for bacteriological and biological examinations, I started doing them myself until I was stopped by the specialist, who said he would much rather do it himself at the hospital, and I think it is the experience of most doctors that the collection of these materials is done at the hospital by the hospital staff, so that it does not take up much of the panel practitioner's time.

On the question of antenatal examination, in my experience that is seldom called for by insured persons. That type of patient usually calls in the midwife or goes to the antenatal clinic. If she calls in the midwife, it is only if the midwife discovers anything abnormal that the panel practitioner is called in. My own experience was that I saw very very few cases of that type.

What I said about pernicious anæmia equally applies to the treatment of diabetes. The treatment is definitely under the control of the specialist. The specialist examines the blood and fixes the dose of insulin, and the insulin is not, as a general rule, administered by the doctor; it is done by the patient himself or by the district nurse. It was my experience that I very seldom had to give the insulin myself. I might have had to give it for about a week or so until I had arranged for the district nurse to do so or had educated the patient to do it. The only thing I had to do was to see that the patient went up to the specialist periodically, and I wrote the prescriptions for the insulin ordered by the specialist. I occasionally examined the urine. In recent years in my experience the district nurses are better trained than they used to be, and the doctors hand over to the nurses very much more work than they did 10 or 12 years ago, such as the dressing of wounds and things of that kind. This relieved me very considerably.

One very noticeable feature of my practice was that when the old age pension for people of 65 came in there was a very notable decrease in the amount of work which I had to do for patients between the ages of 65 and 70. Previous to the granting of the pension at that age a great many of these people, though not organically ill, were yet physically incapable of sustained effort, in which case they got certificates of incapacity from me. As soon as the old age pension was introduced, that class of patient ceased to come until he had got some definite illness. That resulted in quite an appreciable easement of my work.

In the rejoinder of the B.M.A. mention is made of the responsibility of diagnosing appendicitis as being no less than that of the responsibility of the operation. I think that is a debatable point. The doctor certainly has quite a lot of responsibility in diagnosing the case, but has the responsibility increased in 1936 from what it was in 1924? He has got, in my opinion, the same amount of responsibility in 1936 as he had in 1924, and it certainly has not increased. Now that he sends the patient to hospital so early he is sharing the responsibility with someone else. His responsibility ceases as soon as he gets the patient into hospital. The hospital and the hospital surgeon then take the responsibility.

My opinion is perfectly unbiased in any way—I am here to give my honest opinion, that is that in the later years of my practice the responsibility was greatly lessened and the work was in many instances decreased. I think that probably the total amount of work has increased, but the type of case that I had to deal with was less severe than formerly. Patients were coming in at an earlier date and at an earlier stage of the disease. There was less responsibility and less arduous work attached. I had to treat all cases at home—I was 17 miles from the nearest hospital—of pneumonia and rheumatic fever. All I could do in obscure cases was to send them to hospital, if they could walk or sit—going by train—and have them X-rayed. But I had to do the actual treatment myself, whereas in towns it is quite possible that a great number of these cases are treated in hospital.

DR. HARVEY

I was in general practice in a suburb of the city of Birmingham from September, 1920, until March, 1935. The practice was a mixed suburban practice and included a considerable proportion of insured patients. It is my experience that the science of pathology and morbid anatomy still form the basis on which the general practitioner bases his ultimate diagnosis, leaving the more intricate and detailed investigation in the hands of those in charge of the numerous hospital departments which are so well equipped to deal with them. Whilst it is still the primary duty of the panel doctor to arrive at a diagnosis and advise as to the treatment of disease, it is in the main the prerogative of the public health service to deal with its prevention and the adaptation of the individual to his environment. The occasions on which a healthy insured person came to consult me on the subject of how to keep fit were very few, and the amount of time involved was a negligible quantity. It was my experience that there was an increased tendency on the part of a patient to consult his doctor for minor departures from the normal. But this is probably offset by an increasing inclination of those in the towns to go into hospital for the treatment of the more serious forms of disease and to consult the specialist in the out-patient departments of those establishments, both voluntary and municipal, when they were suffering from ailments or disease requiring specialist diagnosis and investigation. The general practitioner is thus relieved from many visits in the more serious cases and from much anxiety and responsibility in general.

It is stated in the B.M.A. rejoinder that the responsibility for diagnosing a case of appendicitis at home and sending the patient to hospital is not less than that of operating in the hospital. I am afraid I cannot subscribe to that view. In my opinion, if the diagnosis is made at home and the patient is transferred to hospital, it is then surely the responsibility of the surgeon at the hospital to confirm that diagnosis or otherwise, and having confirmed it the responsibility for the operation then is his; and I submit that is a much greater responsibility than the one devolving on the panel practitioner of making a preliminary diagnosis.

As regards the improvement in the treatment of catarrhal conditions, I think that to a great extent the treatment is the domain of the hospital specialist. Certainly a large number of cases are sent to be investigated by the specialist. It was my experience in the later years in which I was in practice that most of the cases of serious illness did go into hospital; such cases as pneumonia and rheumatic fever were treated in the acute stages in hospital, and the more serious and complicated cases of fracture were usually sent to those institutions. This was particularly so where treatment in bed was necessary. It might be suggested that the transfer of a considerable proportion of the insured patients suffering from serious disease into hospital meant that the doctor was trying to get rid of some of his work; but in my opinion it is incumbent on the insurance practitioner to obtain for his insured patients that specialised form of nursing and treatment which he would get for his more wealthy patients and that can only be done by transferring these cases to hospital. It was always my privilege to exercise to the full my opportunities to advise in the early stages of disease when consulted by my patient. It is undoubted that there has been an improvement in and elaboration of the methods of diagnosis and treatment, but these methods of diagnosis are, generally speaking, confined to the domain of the hospital specialist, on whom falls, therefore, much of the responsibility and work which in former years devolved on the general practitioner. Such conditions as pernicious anæmia (which was referred to in the B.M.A. memorandum) were in my experience finally diagnosed in this way, and the modern method of treatment by its efficiency reduces the length of incapacity and the time taken in the treatment. The prescribing of liver extract or other suitable preparations cannot be said to be laborious, whilst the injection of campolon or other preparations, occurring as it does except in earlier stages at infrequent intervals, involves no great demand on the doctor's time. It would be agreed that cases of this nature are but infrequently met with, and the number that I personally had under my care were but few in the whole of my career as a panel doctor. The periodic control of the blood picture was invariably the responsibility of the hospital pathologist.

It is, I think, a fact that there has been an increase in the incidence of peptic ulcer during the past ten years, but it is probable that the increase is more apparent than real, in that by the modern method of diagnosis, which includes the use of X rays, cases which were overlooked in the past are now properly classified. Surgical treatment has advanced in its efficiency to a marked extent in recent years, and the results thus obtained, when taken in conjunction with those obtained by systematic dieting and the exhibition of the recognised medicinal preparations, have tended to minimise the extra call which the general practitioner would expect to find in this direction.

Reference is made in the B.M.A. statement to the use of the sphygmomanometer. This instrument has been in my possession and was used in the routine examination of my patients where required, both in their homes and in my surgery, since my earliest days in practice. The modern methods of treating varicose veins and ulceration is such that undoubtedly more time is spent in the actual treatment, but its efficiency is such that in most cases of varicose eczema and ulceration a considerable saving in attendance should result. I cannot call to memory that I was in the habit of using vaccines to any greater extent in 1934 than in 1924, and if the work in the surgery is properly organised the injection of such a preparation calls for no more time than is required to see a case which needs treatment by the more usual methods.

It was my experience, in the particular work in which I was engaged, that the number of confinements amongst my insured patients was considerably less in 1934 than in 1924, and I believe that my practice differed in no material respect from that of many others. The advent of the antenatal clinics was responsible for transferring a number of these cases amongst the poorer population into the care of the midwives. The antenatal work was done by the doctors at the clinics and my services were only required in cases of abnormality or difficult labour The work therefore which I was called upon to do under this heading was not great and those cases which did come to me for advice and examination in this respect were those who placed themselves under my care for their confinements and from whom I received a fee for attendance during labour and the puerperium.

I think it is undoubted that there has been some increase in the number of people suffering from minor nervous diseases. As regards the severer cases of psychoneurosis I make no claim for proficiency myself in this respect. I think they call for more specialised treatment at the hands of a consultant of wide experience.

The collection of material for biological and bacteriological investigation called for but little of my time, and the nature of the specimens required to be obtained by me showed no marked increase in later years. Those required for special investigations were usually taken at the hospital.

There has been a reference to the ageing of the population. It is evident that the proportion of elderly people is increasing, and it was my experience in many cases that whereas these elderly people were regular attendants at the surgery whilst in need of certificates of incapacity on the attainment of the age of 65 their visits ceased except on those occasions where treatment for some ailment was required. There was a noticeable reduction in the amount of work which I was called upon to do for this class of patient when the weekly certificate was no longer needed.

Those people who are suffering from diabetes and pernicious anæmia are enabled to live only because they receive continuous and active medical treatment but the incidence of those conditions, even in a practice of considerable size, is so small that the work entailed cannot be considered as a major part of a doctor's duty In those cases of diabetes which require the regular injection of insulin, the work devolving on the doctor calls for little consideration The prescription of this preparation is done on an ordinary prescribing form and the injection is more frequently carried out by the patient or a nurse. Blood-sugar control is usually carried out at the hospital and the periodical examination of the urine and an adjustment of the dietary are all that is usually required to be done by the doctor These duties have fallen to his lot for many years.

I myself believe that there has been some increase in the demands made by the insured patient on his panel doctor during the period under review; but to offset this there is I am sure, a growing tendency for the more serious and at the same time more interesting cases to gravitate towards the large city hospitals. Encroachments by hospitals and by clinics set up by the local authorities were in my later years of practice causing serious alarm to many of us and although it is generally admitted that such inroads on what had previously been the work of the general practitioner were having serious repercussions on the income from our private practice, it must be admitted at the same time that the effect on a panel practice was to lessen the volume of the work demanded, without any reduction in the remuneration received.

My remarks are based on my own experience in a town practice where hospitals of every kind were available and ready to render any assistance required of them. Of the conditions which exist in a rural practice I have no qualification to speak.

DR. GREENFIELD

I have practised at Rushden Northants, for 35 years. When the Insurance Act came in I was in practice by myself; now I have two partners. At that time my practice was about 2000 We have recently bought another practice, but for the last three years it has been approximately 3300 or 3400 When I was single handed I estimate that my surgery hours were one and a half in the morning with 2000 on the panel. Now there are three of us with a panel of 3300 and we have almost two hours a morning On Dr Harvey's evidence I can offer little remark except to say that his practice is so different from mine that perhaps I had better say nothing He says that all the serious cases of rheumatic fever rheumatism and so on went into hospital but I do not suppose that I have sent rheumatic fever or pneumonia patients into hospital for the last five years—and I am a representative of a very considerable number of practitioners For rheumatic and pneumonia cases I have no hospital provision whatever

As regards clinics I have always understood that they are for the young people but the clinics do not enter into my practice or not very much. I get a certain number of healthy young people coming to inquire what physical training they should undergo

When Dr Mackenna said he practised with a panel of 1500 I began to think I should have some means of comparing his practice with mine but he detailed something that was much nearer the conditions of an earthly paradise than I have experience of his conditions must be very different Both witnesses have referred to varicose veins and said what they used to do My experience differs entirely from theirs. The patients came to see us and we rang the changes on certain lines of treatment—we did not apply any of them actually—but now the whole of the treatment is carried out by ourselves I am not one of those who encourage Sunday attendances at surgery except for small operations like polypus in the nose and so on I suppose I have four or five people on Sunday mornings. But for three years we had roughly four or five people about the surgery for injection of varicose veins, because on the ordinary weekdays we had not room for those people to sit in the surgery and we had to take them on Sunday morning It is contended that by this new treatment we have saved ourselves a lot of work. This may be so in ten years time my successor may be saved a good deal of work but it has saved me none. As regards the treatment of those people who are treated by injections, and then by the application of bandages that requires time and patience and the taking of them off in ten days time also requires a good deal of patience particularly on the part of the patient. All that treatment is carried out by us.

Then take pernicious anæmia; it has been asserted that this is a very rare disease. Actually we have nine cases under treatment at the present time. I cannot say what the experience of others is that is our own. And it must not be assumed that these people go back to hospital after the diagnosis has been established by blood counts. The estimate of how the hæmoglobin is rising has to be pursued we have done a considerable number of these blood counts ourselves. That probably takes an hour or an hour and a half These people will remain as far as I can see under treatment for many years; formerly they died in a few years. In regard to diabetes the point is the same It has been stated that diabetes is for the expert I do not agree With a good general practitioner there is no need for an expert in most cases The weekly visit to have the urine tested and to see about the diet is for the general practitioner But it involves considerable extra work, especially with the young people At the moment I have five or six of these cases

On the question of gastric ulcers I should like to speak firmly It has been assumed that surgery cures these people, and that we no longer need to bear responsibility for doing much more for them I am sure that is not so Dr Hurst tells me that at the New Lodge Clinic more patients are admitted for the results of operation than for ulcer itself To contend that surgical treatment is doing away with medical work is wrong We have a considerable number of these people—probably more than 20 They are assumed to have an ulcer, and in nearly all cases there has to be an X ray examination Do these people get away from us in six months or a year, not needing further treatment? No, they come up year after year Some of them come continuously All of them are frequent visitors to the surgery, and they have added much to our work

Another question that has not been referred to is the use of the microscope In the old days I took a microscope with me into practice and used it occasionally, my juniors use it a great many times a week

I must say a word about old age pensioners I do not agree that pensioners do not come for certificates They certainly do not come quite as often as they did, but many of them require a certificate for their club, and, acting on the advice of the British Medical Association, we give these old age pensioners the certificates they require without charging a fee And they still come to us for medical treatment

And lastly, a word about antenatal treatment I should say that 90 per cent of expectant mothers in my practice come for antenatal examination As for clinics, we have not got one The work falls on us as it always has done, although midwives now attend many cases

After-thoughts on the B M.A Meeting

THE Belfast meeting has inspired the *National Insurance Gazette* (July 29th) to hope that the medical profession may give effective help in solving some problems that still baffle national health insurance administrators Our contemporary recognises that the British Medical Association is not only concerned with safeguarding the interests of practitioners but is a learned body, one of whose functions is to study scientific problems in a scientific way *One of these* problems is created by the continued rise in the claims for sickness and disablement benefit At one time the rise was hastily attributed by administrators to the carelessness or cowardice of the certifying practitioner, but it is now agreed that the subject cannot so summarily be dismissed Incapacity for work is difficult to define, and, in many cases, difficult to recognise It presents a complex problem, standing much in need of a more searching analysis than has yet been attempted It involves difficult questions of industrial psychology The certification of incapacity for work, in short, raises scientific problems that are still unsolved and need to be studied in a scientific way

Similar problems arise from the continued increase in the cost of insurance prescribing The high cost of 1934 was exceeded in 1935 to the extent of 1*d* per insured person in England and of 1½*d* in Wales, representing an increased expenditure of about £70,000 No one wants to deprive insured people of medicines that they need, but do they really need all that are prescribed for them? Oliver Wendell Holmes said that if the whole materia medica could be sunk to the bottom of the sea it would be all the better for mankind and all the worse for the sea, but he was not an experienced clinician There must be few clinicians of long experience who would deny that the much decried bottle of medicine has a place, and an important place, among the aids to the treatment of disease But why should the annual cost of insurance prescribing vary from 54 7*d* and 55 0*d* per person in Manchester and Salford respectively to 27 8*d* and 28*d* in such reasonably comparable areas as Middlesbrough and Darlington? Here again are problems for the solution of which insurance administrators are entitled to look for effective help from the medical profession

Our contemporary is concerned at the statement in Prof Johnstone's presidential address that the *general practitioner "must learn to make his diagnoses without the skilled help which the specialist commands,* and to carry out his treatment with makeshift appliances and with amateur nursing," and expresses the opinion that the time has come for preparing a properly organised system in which such things as makeshift appliances would not be necessary There are many who have come to hold that opinion The British Medical Association has produced its scheme, which still holds the field The criticism has been made that in actual working the scheme would be very costly, but it may well be that a thorough examination of present arrangements would show that a properly organised and efficient system could be thought out, built up, and got to work at a cost not exceeding what the country might reasonably be asked to incur

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 31st, 1937

Notifications—The following cases of infectious disease were notified during the week Small pox, 0, scarlet fever, 1593, diphtheria, 890, enteric fever, 33, pneumonia (primary or influenzal), 381, puerperal fever, 31, puerperal pyrexia 102, cerebro spinal fever, 11, acute poliomyelitis, 17, acute polio-encephalitis, 3, encephalitis lethargica, 1, dysentery, 25, ophthalmia neonatorum, 101 No case of cholera, plague, or typhus fever was notified during the week

The number of cases in the Infectious Hospitals of the London County Council on August 6th was 2836, which included Scarlet fever 713 diphtheria 699 measles, 180 whooping cough 479 puerperal fever 15 mothers (plus 9 babies), encephalitis lethargica 282 poliomyelitis 6 At St. Margaret s Hospital there were 26 babies (plus 10 mothers) with ophthalmia neonatorum

Deaths—In 124 great towns, including London, there was no death from small pox, 2 (0) from enteric fever, 7 (0) from measles, 2 (0) from scarlet fever, 0 (2) from whooping-cough 22 (1) from diphtheria, 40 (13) from diarrhœa and enteritis under two years, and 8 (1) from influenza The figures in parentheses are those for London itself

The only death from enteric fever occurred at Gillingham Nottingham had two fatal cases of measles Diphtheria was fatal in 17 great towns in 4 cases at Liverpool 3 at Manchester Liverpool and Newcastle upon Tyne each reported 4 deaths from diarrhœa Huddersfield and Birmingham each 2

The number of stillbirths notified during the week was 288 (corresponding to a rate of 30 per 1000 total births), including 53 in London

SPECIAL ARTICLES

THE CONTACT IN INDUSTRY

AN ANALYSIS OF TEN YEARS' EXPERIENCE

By W L Scott M C M.D Glasg
SECOND MEDICAL OFFICER TO THE POST OFFICE

WHEN absence from work on the part of a contact with infectious disease is enforced to prevent the spread of that disease and to safeguard the rest of the staff the financial considerations involved particularly in an industrial undertaking such as the Post Office which provides a vital service may be material The control of the contact problem is therefore one which requires thought in the organising of a system which will satisfy all these interests and the difficulties are further increased by the belief still deeply rooted in the lay mind and to some extent in the minds of a considerable number of medical men, that a contact with infectious disease remains a danger to others until the quarantine period is over

Post Office experience covering a period of over ninety years and a system of control which has been modified from time to time as circumstances and changing views dictated, are gradually leading to the abolition of quarantine Since the year 1898 which saw the establishment of the present system there has been no epidemic of any scheduled infectious disease in the Post Office and no recorded case of a contact infecting another member of the staff. In that year the first official form was produced for general use for all contacts with infectious disease and in 1924 an important addition was made when it was requested that every contact who developed the disease within one month of the termination of the invalid's illness should report the fact This has enabled us to obtain information regarding the infectivity of all the infectious diseases enumerated in the Post Office rules and the records of the past ten years have therefore been chosen as a basis for the present review

Before summarising the results a brief account of the system now in force may be of interest It is obligatory for every Post Office employee in England Scotland Northern Ireland and Wales in whose family infectious or suspected infectious disease has occurred to report the fact to his or her supervising officer who in turn refers this report to the chief medical officer for his advice If the disease is small pox plague typhus fever or cholera the contact must remain at home until all the necessary disinfection of the premises has been carried out and the chief medical officer is satisfied that resumption of duty may take place with safety if necessary under medical supervision

Scarlet fever contacts remain at home until either the patient has been removed to hospital and disinfection carried out or the patient has been satisfactorily isolated at home or the contact has removed to other lodgings In the very rare instances where it has not been found possible to remove the patient to hospital and efficient isolation is not practicable the contact is not allowed to resume duty until the illness is ended As a rule the chief medical officer directs that all those Post Office employees who have had personal contact with the invalid or anyone attending him all contacts where the patient is nursed at home and all young persons should be sent to the medical officer and remain under his observation for as long as the latter considers necessary—unless the contact has previously suffered from the disease Meanwhile provided that the rules have been complied with, the contact remains at work

Where contact has followed a case of diphtheria the officer concerned is not allowed to resume duty without a medical certificate of good personal health He reports for duty in the ordinary way but before being allowed to commence work he is sent to the medical officer for examination If a throat-swab is considered necessary absence is allowed pending the result

Enforced absence is not required in cases of contact with such diseases as measles German measles chicken pox, mumps erysipelas whooping-cough

CONTACTS WITH INFECTIOUS DISEASES

Year	Small pox.		Scarlet Fever		Diphtheria		Measles.		German measles		Chicken pox.		Mumps.		Erysipelas	Whooping-cough.*	Enteric fever*	Encephalitis lethargica.	Cerebro-spinal meningitis.	*
	Contacts	Dev dis	Contacts	Dev dis	Contacts	Dev dis	Contacts	Dev. dis	Contacts	Dev dis.	Contacts.	Dev dis	Contacts	Dev dis	Contacts	Contacts.	Contacts	Contacts.	Contacts	Dev dis
1927	5[illegible]		1692	4	833	1	1483	3	1[illegible]2	—	814	2	416	2	53	38	9	4	—	—
1928	60	2	18[illegible]2	10	[illegible]38	3	2737	5	109	2	852	6	319	5	52	[illegible]0	34	—	2	—
1929	[illegible]	[illegible]	1015	11	964	3	11[illegible]8	1	[illegible]30	1	60[illegible]	3	364	2	50	12	34	[illegible]	1	—
1930	190	2	1873	6	1117	8	2695	3	201	—	749	4	515	8	46	9	37	[illegible]	—	—
1931	6[illegible]	3	1468	12	665	3	1139	—	132	1	787	4	257	5	52	13	38	[illegible]	5	—
1932	34	—	1450	3	538	1	2087	3	177	1	686	3	245	1	47	14	25	1	3	—
1933	1	—	2167	10	558	5	902	—	107	1	598	3	273	0	48	14	1[illegible]	—	7	—
1934	8	—	2378	4	707	4	[illegible]203	7	318	2	630	1	315	3	60	9	9	—	2	—
1935	Nil	Nil	1092	4	721	1	760	1	101	—	564	2	364	1	48	13	32	—	—	—
1936	Nil	Nil	1467	7	513	—	2235	3	[illegible]18	1	619	4	295	1	6[illegible]	17	20	—	1	—
Totals	516	11	17 844	71	7897	[illegible]8	17 430	20	2265	9	7000	3[illegible]	3463	34	527	149	52	11	[illegible]1	—

Dev dis. = developed the disease

encephalitis lethargica, enteric fever, and epidemic cerebro spinal meningitis, unless the medical officer of health, for some exceptional local reason, advises quarantine. Each contact, however, is warned that he or she must not nurse or otherwise attend upon the invalid, but if it is essential that any of these functions should be performed by the contact, leave is allowed without pay. Boys and girls are usually kept under the special observation of their supervising officers and the medical officer consulted if they show any signs of ill health during the quarantine periods. The Post Office employs some 260,000 men and women between the ages of fourteen and sixty, and during the past ten years 57,312 of these reported infectious disease in their homes. The accompanying Table gives details regarding this number.

It will be noted that during the period under review there were no cases of plague, typhus fever, or cholera. In 1935 and 1936 there were no cases of small-pox, and the remaining eight years showed a total of 516 cases. One contact in 46 developed the disease within a month of the termination of the invalid's illness—a percentage of 2·1.

Scarlet fever contacts amounted to 17,844, and only 1 in every 251 cases (0·39 per cent.) subsequently developed the disease. Measles contacts numbered 17,436, and only 1 contact in every 670 (0·14 per cent.) subsequently developed the disease. Diphtheria contacts amounted to 7697, and of these only 1 contact in every 274 cases (0·36 per cent.) subsequently developed the disease. Chicken pox contacts numbered 7000, and only 1 in every 218 (0·45 per cent.) subsequently developed the disease. Mumps contacts numbered 3463, and only 1 contact in every 101 (1 per cent.) subsequently developed the disease. No contacts in any of the other groups developed the relative disease.

It will be clear from these results that either the system is a sound one or else we are exaggerating the dangers of these diseases as regards their infectivity, but it should perhaps be remembered that these statistics apply only to a group of persons whose ages lie between fourteen and sixty, and it may be that a smaller risk of infection at these ages has an important bearing on the results. Prolonged observation, however, supports the view that infection, for all practical purposes, cannot be carried by a third person—that is, provided that the contact takes precautions to avoid coming into contact with the invalid, remains in good health, and is removed from duty on showing signs of illness during the quarantine periods. It seems highly probable that when the person who has been in contact with an infectious disease can be adequately controlled, the time will have come when quarantine may be safely abolished.

I should like to record my thanks to all those who have assisted in the preparation of these figures and particularly to Mr. R. F. Tickle of the Medical Branch.

A NEW HOSPITAL FOR CUMBERLAND.—Whitehaven Castle, now used as a hospital and once a residence of Lord Lonsdale, is to be vacated and a modern hospital is to be built on a country estate two miles from Whitehaven at a cost of £149,000. It is expected that the Commissioner for Special Areas and the Ministry of Health will give a grant of about 80 per cent. and the County Council has promised a grant of £15,000 and an annual contribution of £500. The new building will provide for twice the number of patients now treated at Whitehaven Castle, and will have a special maternity wing and X ray and electrical departments.

MEDICINE AND THE LAW

Puerperal Fever: Verdict against Hospital and Doctor.

A MATERNITY patient in Ashby de la Zouch Cottage Hospital who contracted puerperal fever with most serious results has been awarded £3500 damages, in addition to out-of pocket expenditure, on the ground of the negligence of the hospital and the doctor concerned. The judgment is subject to appeal. Meanwhile the disquieting conclusions which Mr. Justice Singleton has drawn from evidence which he must be taken to have accepted deserve full study.

Mrs. Heafield, the plaintiff, began her action against the hospital. She named as defendant Mr. Crane, chairman of the management committee, suing him as a representative of the hospital which is presumably not an incorporated body and therefore not technically a legal entity capable of forensic recognition. At a later stage she added as a second defendant Dr. J. W. Hart of Measham, her medical attendant. It remains to be settled in what proportion the respective defendants will pay the damages awarded and in what manner the hospital will raise its share. A year ago[1] the judgment of the House of Lords in Lindsey County Council *v.* Marshall illustrated the legal responsibilities as well as the medical dangers in respect of the admission of a maternity patient to a hospital infected by puerperal fever. The Ashby de la Zouch case is a fresh warning. It can scarcely avoid attracting public attention. Women, said Mr. Justice Singleton, are encouraged to go into hospital for their confinements because of the greater facilities for cleanliness and safety; he had no hesitation in declaring that Mrs. Heafield would have been far safer at home. Some of the lessons of the case are set out on another page. In this column a summary is offered of the outlines of the litigation. After a patient hearing, judgment was reserved; it was delivered in London on the eve of the Long Vacation.

THE STORY OF THE CASE

The Ashby de la-Zouch and District Hospital has a maternity block consisting of a 5 bed ward, another 2 bed ward, three single-bed wards, a labour ward, and a further room described as the old labour ward. The maternity patients are attended by their own doctors. The hospital is run by a management committee and has five honorary medical officers, one of whom was Dr. Hart, whom Mrs. Heafield made a defendant in her action. Mrs. Heafield, by previous arrangement, entered the hospital for her confinement. She came in at about 7.30 A.M. on Jan. 5th, 1936. Dr. Hart was summoned and the child was born shortly before 11.30 A.M. in the old labour ward, the usual labour ward being occupied. At 6 P.M. Mrs. Heafield was moved into the 5 bed ward. Her temperature was then 100·4°; next morning it was below normal and Dr. Hart found her to be quite well. The first hint of anything amiss was a rise of temperature on the evening of Jan. 6th to 101·4°; next morning it was 102·8°, and, according to the hospital report, the patient was complaining of headache. That night the thermometer showed 104·6°; after a hypodermic injection of S.U.P. by Dr. Hart there was a slight fall. Mrs. Heafield says she felt sometimes very hot and sometimes very cold with violent shivering fits. These symptoms were known to her husband (who was seeing her almost daily) and also to the nurse; it was stated that they were mentioned also to Dr Hart though the point was disputed. On the 8th Mr Heafield told Dr Hart that the patient was feeling very hot. Dr Hart is said to have replied that everything was quite normal. On the 9th the temperature rose again and on the 10th Dr Hart gave another injection of S.U.P. Meanwhile on the 8th he had taken a significant step to which the judge obviously attached great importance at the trial. Besides Mrs Heafield Dr Hart had another patient already in the maternity block, a Mrs Ingham, of whose illness more will presently be said. On the 8th Dr Hart notified both cases as puerperal fever, giving the date of onset in Mrs. Heafield's case as Jan. 6th and in Mrs Ingham's as Jan. 4th. He was obviously worried at this stage for he wrote a strong letter on the same day (Jan 8th) to the secretary of the hospital committee drawing attention to "a most undesirable state of affairs in the Cottage Hospital." Two of his maternity patients, he wrote, both perfectly healthy women who had perfectly normal confinements, had developed puerperal infections and were seriously ill. "In view of the great publicity which has recently been given by the press to diseases of childbirth and maternal mortality I feel that the strictest precautions ought to be taken to prevent further trouble. I regret to say that in my experience the majority of maternity cases develop some septic infection whilst in Cottage Hospital, which is suggestive of faulty nursing." Dr Hart afterwards said that the letter had been too vigorously worded. As a contemporary document it was of course important evidence of his anxiety and of his diagnosis at the time. On the 18th the husband and mother of Mrs Heafield found her flushed, delirious and hardly able to recognise them. The judge accepted the husband's account of an interview in which Dr Hart agreed to obtain a second opinion. Mr C. D. Lochrane, a gynæcologist and consultant at Derby, was therefore called in. After examining the patient, he broke to the husband in Dr Hart's presence the critical nature of Mrs Heafield's illness; he said she was suffering from puerperal fever, must be moved at once and had better go to the Derby Hospital for Women; she was almost certain to require blood transfusions. She was removed to Derby by ambulance on the 19th and there followed a long and serious illness with surgical operations of which more will be said later. For the moment the important point is that this interview with Mr Lochrane on the 18th was the first time, according to Mr Heafield, when he heard puerperal fever mentioned with regard to his wife. Dr Hart of course had already notified the case as such ten days earlier; in his evidence at the trial he said he had no doubt that Mrs Heafield was suffering from puerperal fever or that her present ill health is due to that disease.

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[1] See *Lancet* 1936, 2, 211.

Nobody can extract damages from a doctor or a hospital merely because a patient contracts puerperal pyrexia. A plaintiff has to prove in the first place some want of care or some breach either of contract or of duty and in the second place the fact that injury is due thereto. Mr Justice Singleton had therefore to address himself to the question when and from whom Mrs Heafield contracted her illness. He was satisfied that she was in good health when admitted. Some evidence was offered by witnesses called by the defendants which might suggest that she came in with a cold. The judge disbelieved this suggestion of an alternative explanation of the high temperature; Dr Hart had noticed no signs of a cold; had there been any he must have observed them. As if to support the suggestion a sister had written into the report book under the date of Jan 5th (the date of admission) the words "seems to have a cold." Not being written in the same ink as the rest of the entry, these words led to questions at the trial; it turned out that they had been inserted on the instructions of the matron long after the day to which they purported to belong. The judge described the incident as 'most unfortunate.' He accepted instead an explanation of the infection which was at any rate more straightforward. Mrs Heafield, being perfectly well on admission and having had a normal pregnancy, was placed in a ward along with four other maternity patients. One of these, Mrs Ingham, also (as already stated) attended by Dr Hart, had been admitted on Jan 1st and had been confined that day. Her temperature had risen to 100·4° within a few hours of the birth. The judge accepted this as unimportant, but on Jan 3rd and again on Jan 4th Mrs Ingham had a shivering fit. Her two sisters who were present on the latter occasion corroborated the story here, though the information was apparently not given to Dr Hart.

On the evening of Jan 4th Mrs. Ingham's temperature was 103·2. The night report (at 6 A.M. next day) showed "temperature 104° and lochia offensive." The day report for Jan. 5th showed 103·2°; the night report next morning said "slept well, not complaining, lochia still offensive, temperature 101." The day report on the 6th was "temperature 101·0, seems better to-night"; the night report on the 7th was "lochia offensive, temperature 103°"; the day report of the 7th showed the temperature 104·2. On the evening of the 7th Dr Hart administered a hypodermic injection of antistreptococcal serum and the temperature fell *considerably*.

Mrs Ingham left the hospital on Jan. 19th; she was not really well for some time. Dr Hart afterwards told her that she had suffered from puerperal fever; he had, as already stated, notified the case as such on Jan. 8th. "I think," said Mr Justice Singleton, "he was right in his diagnosis."

If the defendants could have shown that Mrs Heafield was already infected when she entered the hospital, or that her illness was different from that of Mrs. Ingham, the plaintiff's claim would have had a different result. There was some evidence in this direction. Mr A. B. Danby and Mr W. E. Barnie Adshead, called on behalf of the hospital, expressed the view that Mrs. Ingham did not suffer from puerperal fever, but, as the judge pointed out, they were in a difficulty because they had no record by the doctor attending her nor did they see the patient. They saw only the temperature charts and possibly extracts from the hospital reports wherein there was no mention of the shivering fits. Nor did these witnesses hear the evidence of Dr Hart whose case was not begun when they were in the box. Mr Barnie Adshead described the signs of streptococcal infection—local infection, offensive lochia, and tenderness of the uterus, plus a pulse rise plus rigor and general malaise. These, he said, were the signs for which a general practitioner would look together with high temperature. He himself was apparently not satisfied that anything more than high temperatures were present; he was not satisfied of the offensive lochia or the *rigor*; the judge however was satisfied of both. Another witness, Mr J. P. Hedley, giving evidence on behalf of Dr Hart, expressed the view that Mrs Ingham's case was a localised infection of the uterus falling into the sapræmia group. He said he would have come to the same conclusion with regard to Mrs Heafield on the chart alone, but the bacteriological result led him to a different conclusion Between Feb 7th and 11th four specimens of pus were taken from different parts of her body and a culture was obtained of each, the germ found was a pneumococcus Mr Hedley, by whose evidence the judge expressed himself as considerably impressed, thought Mrs Heafield was a pneumococcal case, the infection arising more probably outside the hospital On the other hand Dr John L Berry, of Burton-on Trent, held Mrs Heafield's to be a streptococcal infection and said his view was not affected by the finding of a negative result from a blood culture or by the finding of pneumococci in the pus at a later date The judge, while allowing full weight to Mr Hedley's view did not think that the mere presence of pneumococci in the pus pointed with certainty to the original infection having been pneumococcal, nothing in the evidence induced him to believe that Dr Hart was wrong in diagnosing the cases of Mrs Heafield and Mrs Ingham as being of the same character, both were cases of puerperal fever beginning with local infection, Mrs Ingham recovered fairly soon, but the infection spread in Mrs Heafield's case and septicæmia was unfortunately followed by the trouble which remained with her The judge recalled that on Jan 21st Dr Hart had told Mr Heafield that Mrs Heafield got her illness from Mrs Ingham, and that it was in fact puerperal fever Accepting this as correct, the judge said it did not greatly matter how and from whom Mrs Ingham was infected Mrs Ingham was suffering from puerperal fever on Jan. 4th and onwards Mrs Heafield, within about seven hours of giving birth to her child, was placed in the same ward Mrs Ingham had a temperature of 104° and Mrs Heafield's bed was opposite the end of Mrs Ingham's There were other suspicious cases in the hospital at the time The judge commented on the fact that fresh maternity cases were being admitted while existing patients had high temperatures, the doctors did not know that other doctors' patients were running high temperatures and showing dangerous symptoms, it did not occur to the matron to tell them Mrs Ingham's case, he said, was suspicious on Jan 4th and was clearly one of puerperal fever or infection on the 5th, that night there was obviously sufficient to show that no healthy patient should go into the ward where Mrs Ingham was, yet Mrs Heafield was placed in the ward, no precautions were taken, and the same sister or nurse went from one patient to the other and attended to the dressing of all The judge quoted the following passage from Sir Bernard Spilsbury's evidence —

> When notifiable fever occurs, the case should be isolated from other patients and no other patient should be admitted to the same ward *or room until it has* been thoroughly cleaned and sterilised the nurses attending a *septic case* should never be allowed to attend another clean case, the nurses ought always to have their clothing covered with sterilised gowns, they should wear masks and, most important of all wear gloves in every case steps should be taken to trace the source of the infection '

Mr Justice Singleton did not regard this as too high a standard for the maternity block of a hospital It was part of the *plaintiff's* case that the sister who was assisting Dr Hart at the delivering of Mrs Heafield wore neither antiseptic overall nor mask nor gloves she said she was not in the habit of doing so unless specially directed by the doctor The judge in this connexion quoted from Mr Hedley's evidence

> I always use a mask myself when attending a confinement the attendant at a labour should wear a mask I think gloves should be worn too, if there is a suspected case of infection in the ward, all the more need for gloves "

Apart from any lapse from proper standards of hospital practice there was a question of compliance with the statutory regulations The judge gave Dr Hart credit for having notified the cases of Mrs Heafield and Mrs Ingham Of the other patients "in more than one case there ought to have been notification of puerperal pyrexia, but in no case was it done before the matters I have spoken of came to light There was complete disregard of the statutory regulations by which a medical practitioner is required to notify all cases of puerperal pyrexia on his becoming aware of them " These Public Health (Notification of Puerperal Fever and Puerperal Pyrexia) Regulations, 1926 (Statutory Rules and Orders 1926, No 972) were accompanied by a circular letter *from* the Ministry *of* Health to local authorities dated August 9th, 1926 The letter stated that the Minister

> " desires to take this opportunity of impressing upon all *those concerned with the administration or treatment* in maternity institutions that the presence of infection, however slight in degree, in a patient or any member of the staff should be considered as liable to give rise to an outbreak of virulent infection and should be dealt with accordingly "

The judge thought it " regrettable to say the least " that the regulations were ignored It was in Dr Hart's favour that he reported his two cases on Jan 8th, but he was not familiar with the regulations or with the forms in the schedules thereto on which the doctor can ask for a second opinion, for a bacteriological examination of lochia or blood, or for other hospital treatment He used a general form notifying the date of onset of the pyrexia Mr Justice Singleton thought that conditions at the hospital were " most lamentable " and hoped that they would never recur He was, it would seem, particularly surprised to find that none of the doctors who had patients in the hospital had any idea or suspicion of infection in the case of the other doctors patients until the date of Mr Lochrane's *visit—about* a fortnight after the day assigned by Dr Hart as the date of onset of puerperal pyrexia in Mrs Ingham's case

Summary of the Legal Position

Summing up the legal position resulting from these findings of fact, the judge considered first

THE LIABILITY OF THE HOSPITAL

On behalf of Mr Crane, the chairman of the hospital committee, it had been submitted that, from the moment when Dr Hart arrived to deliver Mrs Heafield the *matron,* sisters and nurses were *his* servants and so remained all the time while Mrs Heafield was at the hospital Dr Hart, it was said, agreed that his other patient, Mrs Ingham, was a danger and he did not dispute that the admission of Mrs Heafield into the ward where Mrs Ingham was being nursed was unjustifiable But it was argued that Mrs Ingham and Mrs Heafield were Dr Hart's patients and that the only duty of the hospital was to communicate with the husband or doctor, as the doctor knew the facts, there was no breach of duty in not removing her The hospital further contended that, if the matron was at fault, she was independently exercising her professional skill and was not the servant of the management committee Counsel referred to the dictum of Lord Sankey in Lindsey C C *v* Marshall—" in the case of a nursing home conducted by local authorities, the local authority is not responsible for negligence of doctors, matron, or nurses while acting in the exercise of their professional functions and knowledge Counsel added that the matters wherein the defendants were alleged to be at fault in Mrs Heafield s case were matters involving exercise of professional functions and knowledge if there was any act resulting from the exercise of purely administrative duty by the management of the hospital there was no evidence upon which a jury could find a breach of duty or negligence This contention used to be better known as the principle of Hillyer v St Bartholomew s Hospital A hospital committee has not the technical knowledge necessary for diagnosing a patient s illness prescribing an appropriate medicine or deciding upon the nature and moment of surgical operation It is bound to leave these matters to experts whom in these problems of professional skill it has neither the wish nor the ability to control Consequently the sole responsibility of the hospital committee is the choice of competent experts. But the House of Lords in the Lindsey County Council case narrowed this immunity Lord Hailsham said that the complaint was that the local authority invited Mrs Marshall to a home which it ought to have known was in a dangerous condition, and failed to inform her of the facts which constituted the danger In Lord Wright s parallel the duty was scarcely distinguishable from what would be the local authority s duty if there was good reason to suspect that the drains of the maternity home were defective and involved a risk of typhoid to the patients The local authority of course would have to be guided by sanitary engineers and hygienic experts ; but it would be responsible for their negligence—similarly if a defective ceiling was left negligently unrepaired so that it collapsed and injured a patient in her bed The duty was in essence not dissimilar from that of a householder who has to take care that persons invited into the house are not negligently exposed to danger or at least are duly warned of the risk—for instance if there has been scarlet fever in the house so as to involve infection In the Ashby-de la Zouch case, said Mr Justice Singleton the matron could not absolve herself or the hospital authorities from responsibility by saying I relied on the doctor or the doctor did not tell me ' She is the head of the hospital and is in charge on the administrative side She makes the arrangements to receive the patients (under the hospital rules) and she or one of her staff under her direction decides into which bed or ward a patient shall go She must be taken to know the conditions of the hospital and of the maternity ward in particular It is her duty not to subject patients to risk of infection. If she receives a patient into a ward where there is infection she invites the patient into a dangerous place The matron was acting on behalf of the hospital authorities and was in no sense the servant or agent of Dr Hart. Indeed, said the judge it was not proved that Dr Hart knew the condition of Mrs Ingham before Mrs Heafield s admission Those at the hospital failed in the duty they owed to Mrs Heafield not to place her in a ward where there was a suspicious case. From that failure of duty damage resulted and the hospital authorities were liable in damages

THE LIABILITY OF DR HART

The judge now turned to the liability of Dr Hart. The latter s counsel apart from the dispute on the facts submitted that Dr Hart was not responsible for the admission of Mrs Heafield to the hospital or to the ward and secondly was not responsible for the failure to remove her from the ward It was true, said the judge that Dr Hart did not so admit her but he had in the hospital ward a patient (Mrs Ingham) who was a gravely suspicious case on Jan 4th ; he knew her condition on the 5th. Dr Hart ought to have taken steps to isolate Mrs Ingham and to prevent infection spreading That was a duty he owed to the other doctors who had patients there and to the hospital of which he was an honorary medical officer It was a duty he owed to Mrs Heafield, who was his patient and had just given birth to a child Mrs Heafield was in consequence infected and contracted puerperal fever from Mrs Ingham— through a nurse or directly or indirectly from Mrs Ingham ' He never caused Mrs Heafield to be removed made no protest to the matron gave no instructions and uttered no warning of the danger of infection He left his patient exposed to it A second point was that until Jan 18th or 19th after Mr Lochrane had been called in Mr Heafield was never told of the nature of his wife s illness

In a case such as this I believe it to be the duty of the medical attendant to advise the husband of the patient s condition so that he may have a second opinion if he wishes ' If Dr Hart had told the husband or had himself suggested a second opinion earlier some steps might have been taken in better time to ascertain the cause of the trouble this might have improved the chances of the patient Mr Barnie Adshead a witness for the hospital said that a swab ought to have been taken on Jan 7th it might have saved much suffering It may be recalled that the failure to inform the husband was an element in the negligence in the Lindsey County Council case last year

The remaining issue was

THE QUESTION OF DAMAGES

Mrs Heafield had been four months in the Derbyshire Hospital for Women under Mr Lochrane On many occasions pus was drawn from her body on one occasion three pints Then she went home She was reduced to less than 5 st in weight and she was crippled A bony change on both hips made movement at these joints impossible her legs had to be up as she lay in bed ; she was bent with the legs at an angle to the trunk. She was twice operated upon at the Hospital for Cripples in Birmingham Each operation involved cutting through a thigh bone in order to give a fresh alignment ; some further operation may be necessary There was stiffening in one shoulder and in one wrist. She will not be able to walk normally She will be able said the judge to waddle about the house and do something on the ground floor Nothing in the way of damages he continued could compensate for the pain and suffering in such a case as this Having awarded the sum of £3500 for general damages as already stated and £149 2s for special damage the judge directed a stay of execution till Oct. 1st if the damages are brought into court by that date and notice of appeal is given there will be a further stay till the appeal is heard The special damage is to be paid in any event The court directed that execution should not be issued against Mr Crane the chairman of the hospital committee without further application after all, Mr Crane is doing a public service in that capacity said the judge, and should not be lightly subjected to a burden of that kind But the court declined at present to make any suggestion as to the apportionment of liability between the two defendants Thus ended a trial which had occupied five days at Derbyshire assizes Dr Hart's defence was conducted by Messrs Le Brasseur and Oakley for the London and Counties Medical Protection Society and he can certainly feel that his advisers presented his case with all the resources at their command The fact was mentioned that Mrs Ingham has again been confined since the dates material in Mrs Henfield's action and has again been attended by Dr Hart

INTERNATIONAL POPULATION CONGRESS

THE congress organised under the auspices of the International Union for the Scientific Study of Population Problems was held in Paris on July 29th–31st and August 1st, and was attended by delegates from 30 countries including 22 from Great Britain The congress was opened in the presence of M Albert Lebrun, president of the Republic, and then divided into five sections The variety of the subjects dealt with shows how complex are the population problems that now press for solution, and with what interest they are being studied in many parts of the world.

MEASURING CHANGES IN POPULATION

A full session of the congress was devoted to discussing methods of measuring the tendencies of population growth, a subject on which distinguished work has lately been done by Burgdörfer, Kuczynski, and Lotka It is known that birth rates, death rates, and rates of natural increase computed on the total population give not merely an inadequate but a misleading indication of the real balance between fertility and mortality, and that little, if anything, is gained by the use of rates based on an arbitrarily chosen "standard" population A community may have an annual excess of births over deaths and yet be reproducing at a rate insufficient to bring the number of births in the next generation up to the number of births in the present generation That this is now the position in most countries of Western Europe and in the United States has been shown by the use of the net reproduction rate, an index explained in a series of important books by Dr Kuczynski, and it seemed to be generally thought that this rate is the most widely useful index for measuring the real balance of fertility and mortality and for showing where present tendencies are taking us

GERMAN MEASURES TO INCREASE POPULATION

Among the papers that attracted most attention were two dealing with the measures taken by the National Socialists to increase population growth in Germany One by Dr F Ruttke, director of the Reich committee for national health service, gave an account of the more important measures (apart from the provision of marriage loans of which much has already been heard) adopted to encourage the production of large families allowances to parents of not less than four children under 16 years, rebates of taxation rising steeply with each successive child, substantial reductions in railway fares, housing facilities, rent allowances, and preference to fathers of large families in filling vacant situations Various public corporations now arrange for "family burdens adjustment" among them the Association of German Insurance Doctors Since July 1st, 1934, the insurance societies have transferred 2 per cent of their contribution income to the head office of the association to form a family burdens adjustment fund, from which a monthly sum of 50 marks is paid to an insurance doctor for each child after the second, so long as his income from insurance practice does not fall below 1000 marks per annum The payments are made by the association direct to the doctor A somewhat similar scheme has been adopted by the German Apothecaries Society Dr Ruttke held, however, that the offer of economic advantages formed a comparatively small part of the German population policy, since it was realised "that hitherto no State had succeeded by economic measures alone in stopping the decline of a people in numbers and quality" He attached more importance to what he called the moral and intellectual recuperation of the entire people, which he thought the National Socialists had brought about in Germany

Dr F Burgdörfer, director of the German statistical office, gave the following figures showing the success so far achieved by the German population policy, which was adopted in 1933

Year	Number of births	Number of births per 1000 population
1933	971,000	14 7
1934	1,198,000	18 0
1935	*1,264,000*	*18 9*
1936	1,279,000	19 0

Dr Burgdörfer agreed with Dr Ruttke in attributing the success of the German population policy chiefly to the new outlook on life, especially family life, now taken by the German people

URBAN AND RURAL ECONOMIC PROBLEMS IN AMERICA

One of the most striking features of the congress was the valuable group of papers contributed by the American delegates, most of whom had already won an international reputation by their writings on population In its enormous area, and in the extraordinary variety of its social, economic, and racial conditions, the United States presents a field of unique demographic interest, and the data afforded by the official census and vital statistics have been considerably supplemented by the results of special inquiries undertaken by voluntary organisations, notably by the Milbank Memorial Fund and the Scripps Foundation American students of population have not been backward in utilising their opportunities, and in no other country has more attention been given to the numerous problems, quantitative and qualitative, of population In the United States, as in other countries, increasing urbanisation is characteristic of modern life Whereas in 1870 the people living in cities of 25,000 population or more, and the people living in places with less than 2500 population formed 15 1 per cent and 73 8 per cent respectively of the total population, the corresponding percentages in 1930 were 40 1 and 43 8 In the cities fertility is low Dr Truesdell, of the U S Census Bureau, stated in his paper that "at the present time the rate of natural increase in most cities is either below zero or so close to it as to be negligible" Among the farm population, on the other hand, fertility is so high that many of the young people are unable to find employment on the farms—a condition that becomes intensified with improved farming technique—and stream into the cities But rural fertility is now declining, and unless there is a considerable increase in immigration population growth in the United States will probably stop well within the present century The usual forecast is that the maximum population will be reached between 1970 and 1980 but Dr O E Baker, of the U S Department of Agriculture who has made a special study of the farm population is inclined to think that some time about 1950 is a more likely date.

Prof. Raymond Pearl, who unfortunately was unable to attend in person contributed a remarkable paper on the association of relatively low fertility with relatively high economic position His study which was based on the reproductive histories of 22 657 American women of whom 19 613 were white and 3044 negroes showed that increasing economic status was closely associated with (1) increasing age at marriage (2) increasing use of contraceptive methods and (3) increasing efficiency in the use of such methods He found also that induced abortions were much more frequent among the women who practised contraception than among those who did not, and he concluded that if it were not for these factors there would be little if any difference in fertility between the different economic classes

RECENT MOVEMENTS IN IRELAND

Among the papers contributed by the British delegates was one by Prof A M. Carr Saunders and Mr R S Walshaw on a subject to which little attention has hitherto been paid—recent population movements in Ireland. The authors pointed out that the decline of population between 1846 and 1931 in the territory now known as the Irish Free State was due not to birth control but to late and few marriages and to a large emigration, chiefly to the United States Since 1932 the population has begun to increase because marriages have become more frequent and take place at earlier ages Though emigration has diminished it is still considerable but is now directed to Northern Ireland and Great Britain which every year receive accessions of population from the Free State Sir Charles Close read a paper on the calculation of death rates in which he drew attention to the unsatisfactory nature of the rate derived by comparison with the standardised ' population, and suggested that instead of such rates there should be general acceptance of the life-table death rate—i e the reciprocal of the expectation of life at birth in years, multiplied by 1000 Mr D V Glass read a paper on economic fluctuations in marriage frequency and Dr Conyers Morrell one on recent changes in the seasonal distribution of marriages and their influence on the incidence of births and of infant mortality

INCREASE IN JAPAN

An important paper was submitted by Mr Inouye director of the Institute for the Study of Population Problems in Japan who said that about 1900 the population of Japan entered upon a period of rapid increase and that although since 1920 the birth rate has declined the death rate has also declined so that the rate of natural increase is still high. He estimated that the population of Japan (excluding Korea Formosa, and Saghalien) which in 1935 was 69 254,000, will be about 95 000 000 thirty five years hence This rapid population increase created problems the ultimate settlement of which lay he thought, in the real understanding and sympathy of the nations of the world and in international coöperation.

ALIEN IMMIGRANTS IN FRANCE

Papers of exceptional interest were contributed by the French delegates M Mauco gave an account of an inquiry now being made into questions arising from the large number of alien immigrants working in French agriculture not only as wage-earners but as small proprietors Certain French departments such as Lot-et Garonne and Gers depopulated by the decline of the French birth rate have in recent years been largely colonised by Italians and there has been also a considerable immigration of Belgians Spaniards and Poles The aliens for the most part have a lower standard of living and a much higher natality than the French, and form a steadily increasing proportion of the population of France

Particulars were given of a circular issued in July 1937 by the Minister of Education prescribing that in French schools instruction should be given on population questions in particular on methods of measuring population growth and on the importance of considering the age composition of the population.

The organisation of the congress was a model of efficient and tactful working thanks chiefly to its president M Adolphe Landry ably seconded by M Boverat who performed remarkable feats of translation in three languages In the discussions and in the social gatherings an encouraging spirit of cordiality prevailed.

THE LANCET **100** YEARS AGO

August 12th 1837 p 731

The following are copies of the questions put at the examination for prizes at University College The candidates were secluded for ten hours while preparing their answers without books or the possibility of communicating with each other —

UNIVERSITY COLLEGE, LONDON EXAMINATION APRIL, 1836–37

Principles and Practice of Medicine —First Paper

1 What are the phenomena of the blood and its vessels in active hyperemy ; and what are the phenomena of suppuration and mortification ?

2 What are the chief means to be employed in the treatment of continued fever and the rules for their respective administration ?

3 What are the symptoms and sequelæ of scarlatina and the treatment of the disease and its sequelæ ?

4 What diseases of the skin are generally inflammatory and what are often atonic or cachectic ; and what are the distinguishing characteristics of the two conditions ?

5 What is the distinction in the symptoms, between inflammatory and non inflammatory affections of the head and what are the remedies for the latter ?

6 What are the characteristics of insanity and what are the principal points in its treatment ?

Second Paper

1 What is the distinction between spasmodic and inflammatory cough and spasmodic and inflammatory dyspnœa ; and what are the remedies of the spasmodic, with the rules for their administration ?

2 What morbid sounds occur in the heart and arteries and under what circumstances do they occur ?

3 What are the various forms and causes of gastric and intestinal hæmorrhage and what are the respective remedies with their doses ?

4 What are the nature situation, effects, and treatment of biliary calculi ?

5 What are the phenomena of a phosphatic disposition of the urinary organs ; and what is its treatment ?

6 What are the various causes of deficient micturition ; and their distinguishing characteristics ?

JOHN ELLIOTSON Professor

⁂ John Elliotson who was largely instrumental in the founding of University College Hospital was professor of the practice of medicine in London University from 1831–38 In 1838 he was compelled to resign the chair on account of his unauthorised support of mesmerism —ED L.

PUBLIC HEALTH

Annual Report of the Ministry of Health

THE annual account, addressed by the Minister of Health to the King, of the working of his department deals with the financial year—April 1st to March 31st—and the period under review thus does not correspond with the calendar year used by the chief medical officer in his special report to the Ministry. The report from the Ministry, for the year ended March 31st, 1937, which was published on August 4th, with creditable expedition, is concerned mainly with finance and administration, but contains much of interest to the medical profession. The year reviewed was the healthiest in the history of England and Wales, and so afforded Sir Kingsley Wood, whose optimism is as conspicuous as his energy, the opportunity of writing a cheerful foreword. Its kernel is that since 1919, when the Ministry of Health was formed, the standard death rate has fallen from 13.0 to 9.2, the infantile mortality from 89 to 59 per thousand live births, and the death rate of children between one and five years of age from 12.4 to 5.5. In 1936–37, maternal mortality sank to 3.81, the lowest it has been for fifteen years. Few will dispute the statement that "English men and women, and more particularly English children, enjoy a healthier and fuller life than at any time since the industrial revolution." None other of His Majesty's Ministers can report such progress in every direction.

The cost of the health services last year to the central government was £140,000,000, of which £75,000,000 was spent on health insurance and pensions. In addition to this sum local authorities spent £160,000,000 raised by rates, of which £50,000,000 went to public health services. So the total cost of health and pensions falling on public funds is about £5 per annum per unit of population. All the departments of the Ministry of Health show favourable returns compared with previous years. Deaths from pulmonary *tuberculosis* numbered 23,801 and from other forms, 4467, both low records giving between them a death rate from tuberculosis of 692 per million living; this is much the lowest we have yet touched. The death rates from tuberculosis in the decade 1901–1910 were: pulmonary tuberculosis, 1143; non-pulmonary, 503. In 1935 the rates were: respiratory tuberculosis, 552; other forms (including laryngeal tuberculosis formerly included in the non-pulmonary division), 135. The Minister emphasised the need not for more, but for better facilities for tuberculous patients. Owing to the sharp fall in the disease, accommodation which was inadequate in the past is to-day sufficient in quantity, but its quality is not good enough, especially in view of improved methods of treatment now available.

On Dec. 31st the notified cases of tuberculosis in England and Wales were 214,272 pulmonary and 93,735 non-pulmonary, a total of 308,007 in a population of just over 40 millions. We do not know how many cases which have escaped notification should be added to the list or what percentage of those notified might be struck off either because they are cured, or because the diagnosis has been revised. It is satisfactory to hear that the number of radiological examinations made at the dispensaries in 1936–37—namely, 121,951—was double that of 1929, for abroad our service has been criticised for poverty of facilities for X rays.

The *venereal centres* show a slight drop in attendances, to 3,232,986, and as the percentage of cases found not to be suffering from venereal disease increased to 43, it is likely that the drop in attendance reflects a drop in incidence. There is much evidence that syphilis is decreasing; of particular interest is that whereas cases of congenital syphilis seen for the first time diminish steadily for ages below 15 years, there is a slight increase in new cases over that age. Of 1802 new patients in 1936, 888 were over fifteen years of age; in 1934, of 1870 cases only 787 were of that age. Gonorrhœa is not decreasing, so the proportion of gonorrhœa to syphilis rises steadily. In 1925 it was 1.6 cases of gonorrhœa, in 1936 it was 2.6 to each case of syphilis. The report suggests a reduction of syphilis in 1936 to 56 per cent. of what it was in 1920.

Notifiable diseases, the zymotic diseases of former times, had few features of interest in 1936. Twelve cases of variola major, eight of them in Oldham, were notified, but the minor variety which was prominent in the last decade has apparently died out completely. Notifications of *typhoid* fevers increased to 2493, the highest number for many years, but typhoid has been mounting steadily since the drought of 1934. Last year there was one major outbreak of typhoid on the south coast which supplied 718 notifications locally, and there is reason to believe that many cases notified in remote parts were connected with that outbreak. The south coast epidemic was milk-spread and is the most important milk-spread epidemic of true typhoid (Eberthella) in British history. Encephalitis lethargica continues to drop. The vaccination rate of infants fell to 35.4 per cent. in 1935 and conscientious declarations exceeded one half of the live births. An imported case of yellow fever occurred in 1936, the first for over seventy years.

The chapter on *cancer* is short; no figures are submitted. We must wait for the report of the chief medical officer to learn the incidence of fatal cancer in 1936. It is believed that the gross incidence was the highest on record, but on standardisation will show little change from the past three years.

From the figures there appears to have been a great increase of *blindness* during the past few years, the number of blind persons having risen by 5455 since 1932; but a glance at the table of blind persons arranged according to age shows that the position is really satisfactory, for blind persons below 40 years of age diminished in the period by 625, whereas those over fifty increased by 5661. This suggests a decrease in the causes of blindness and a favourable outlook for the future. A brief paragraph on the *deaf and dumb* does not promise much hope of legislation for these unfortunates in the near future.

Maternity and child welfare showed considerable expansion in 1936, notably in the provision of schemes for the supervision of toddlers. The Midwives Act, 1936 came into operation on July 30th of that year, but activities did not start until July, 1937. Of great interest to medical practitioners will be the comparison of the working of the English Midwives Act of 1936 with that of the Scottish Maternity Services Act of 1937, for this will enable us to contrast two totally different systems of midwifery practice. Amongst diseases which are rapidly ameliorating is *ophthalmia neonatorum*, which continues to decline both in numbers and severity in spite of the continued high prevalence of gonorrhœa.

The section on *foods and drugs* shows that the population is eating more fruit and drinking more milk, but the average consumption of milk per person per day is even now no more than half a pint There was an increase of 662 in the number of licences granted for the production of tuberculin tested milk this is good but not up to expectation So far as the working of the Sale of Food and Drugs Acts is concerned adulteration seems to be now negligible except for the watering of milk and spirits.

Those parts of the report which deal with the *sanitary services* and *housing* are satisfactory in so far as they record the purchase of 9050 acres of recreation ground great progress in housing and belated attention given to rural water-supplies

An all round improvement in *insurance practice* is indicated. The commissioners seem to have little cause for grievance with the way doctors carry out their side of the contract for the faults found in the conduct of practitioners were few and in the main trivial. In 116 cases remuneration amounting in all to £806 was withheld from practitioners The number of such cases is higher than usual, though the rate is not for 1930 was an unusually busy year with 16 million contributors There were only three cases of fees improperly charged apparently only two of improper treatment and 21 of infringement of certificate rules In only one instance was removal from the medical list considered and this was rendered unnecessary by an undertaking of the doctor not to engage again in insurance practice Excessive prescribing still troubles the Minister In the report this is treated as a purely financial matter though perhaps the chief objection to excessive prescribing is that it is not good practice The number of doctors engaged in treating insured persons was about 16,000 an average of one doctor per thousand potential patients The doctors received £6 868 000 apart from mileage fees this works out at an average income per doctor of £429 The cost of drugs and appliances paid to chemists was £2 084 600 and in addition £190 000 was paid to doctors for medicines dispensed by them in rural areas The number of prescriptions issued was over 63 millions an average of 4 72 per insured person.

WELSH BOARD OF HEALTH

The last part of the report is devoted to the work of the Welsh Board of Health and follows the same plan as the parts devoted to England Good progress was made in the Welsh services in 1930 The maternal mortality was 5·17 which, though much higher than the rate in England is the most favourable but one since 1926 and well below the average of the three preceding years which was 0·08 The death rate per million from tuberculosis was 861, the first year on record in which it has been below 900 The King Edward VII Welsh National Memorial Association is a voluntary body which carries out the treatment of tuberculosis on behalf of the local authorities for which the latter paid £259 000 in 1936–37 Under a new agreement this sum will be raised to £305 000 after 1940

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM F R C S (1936)

II

It was a common teaching to us in the wards to lose no time in developing the senses. If a doctor had not by nature been endowed with the qualities of the hawk then it was his plain duty constantly to devote himself to the development of the faculties not omitting the olfactory Our fellow passengers in tube or train were pointed out as excellent material upon which to practise the powers of observation. The idea took strongly amongst those who were able to recapture some of the past pleasures of beaver in spotting a Parkinsonian facies or facial palsy My own results were disappointing Complete visual examination of the clinic took only a few seconds of the half hour journey and the bag was never very startling On no occasion had I to worry about my social duty regarding the gentleman opposite with a lip chancre. More yielding in diverse return was a study of how fellow devotés of our tuppeny daily read their news A three year statistical study on the Central London line showed a clear majority for the lower corner of the back side of the sports page On that railway I saw no performer of Dr James's class shaping as though the cross word were a task to be accomplished during the light-boiling of an egg Only two further clear-cut results emerged from my observations the first that on golf days Mr Bernard Darwin was sure to prevent a large field from reaching the financial news before the Bank, and the second that I enjoyed alone my taste for obituaries in the early morning

* * *

There is a spaciousness in these reviews of past lives that does for me what Kruschen is said to accomplish for the outlook of the costive In reading the many paragraphs extolling the great capabilities and high talents of an oriental Prince and the very short reference to the capricious nature and violent temper which led to his summary ejection from his domain it is impossible not to feel that this is the broad and benign view taken by the deity or that this lofty perspective cannot fail to influence the ultimate judgment It is said that to obtain the fullest savour from this column a certain seniority and a pencil are necessary that then can be enjoyed the solid satisfaction of crossing off contemporaries as they show their inferior stamina.

* * *

There are those who get their forecast of the future from the Personal Column whose lively imaginations like Mr Fleming's can from a vacancy for two guns to share expenses best references required and given conjure the picture of two red faced men at a bar saying What we need is a couple of suckers each with two hundred quid Others who regard the Engagement Column as a list of stud bookings for the coming year may consider it a sounder basis for imaginative speculations on the future. Nor had I ever thought that this column was ever given more than the rapid scansion necessary to detect a familiar name warranting a congratulatory note. Last week in this innocence I announced my engagement. Just who are most interested in this column was soon apparent One photographer must have studied the marriage forecast with his breakfast for his circular arrived before lunch a mail ahead of a field of three florists two furniture stores and a shoemaker In forty eight hours the entry had risen to fifty at this point there was a sharp decline, and the mail has steadied to two or three a day for the last ten days. There is now nothing that the young couple might ever need which has not been illustrated in some elegant brochure. It has been pleasant to meet again those old friends in the photography business whose congratulations and gratuitous offers first appeared after the primary and subsequently punctuated my academic career.

The massed batteries of the furnishing trade are reserved for the female of the species, and no fire is wasted on the male. There was a uniform trust in the sales value of a coloured picture of a vast double bed set in a baronial hall. If the store also possessed a lingerie department the nuptial effect would be heightened by a hovering silk clad nymph. For the rest there are few concessions to the occasion, the jewellers concentrate on plain rings of gold and platinum, food firms on wedding cakes and bewiskered pictures of the founder of the business, but most rely on a coronation rather than on a special nuptial display. Not all the mail is intended for both parties. One, an elaborate and heavily illustrated document about a breast supporter and corset, made no use of slogans to keep abreast of the times or to use a brassiere that really uplifts. It chose to rely on protection afforded against "cancer, tumour, inflammation, cysts, mastitis and pain." A devastating picture of a young lady supporting only one breast with their contrivance and labelled with and without was given much prominence. For further conviction a quotation, unhappily anonymous, from one of many Royal letters of thanks was reproduced. At this point orthodox advertising ceases. The contraceptive firms conduct their correspondence under a heavy personal seal and many long preambles about their reluctance to solicit unwilling clients. They beg to be excused this unorthodox intrusion on the grounds that usual methods of advertisement are denied them. Their politeness in this sphere is unique, although the enclosed accounts are couched in an irritating pseudo-medical jargon. The sound basis of one method advocated was possibly suggested in the subscription to a picture of the shop. It said "the public would admire the ingenious method employed to keep the sexes strictly apart." A more curious manifestation of the commercial mind is the attention given by the manufacturers of energising tablets to the names of those in the engagement columns. After several of these a wayside pulpit text arrived opportunely. It adjured the reader to "make it a stern rule of life not to be too critical."

In early '35 the blankness of the European horizon made the prospect of qualification contrast poorly with the opportunities of the early Georgian era. There seemed no lack amongst us of embryonic doctors who would welcome a return of the lively days when a picnic war in the Balkans provided for the enterprising a ready escape from hospital routine. Envy for this particular period was not infrequently stimulated by the personal reminiscence of a senior surgeon who told of rollicking fun with a private ambulance in Albania. The picture evoked was that of a jolly caravan trip through the Balkans punctuated by quantities of the most stimulating sort of Front Surgery work and frequent interludes for high jinks in Zagreb. There seem not a few about to receive their diplomas who given a similar opportunity would feel with the poet

Let me like a soldier fall
With my breast expanded to the ball!

True in Manchuria and in Paraguay internecine activities of the greatest vigour were being conducted. But they were scarcely the right sort, remote in the first place and quite lacking in any sporting element in the second. These surprising relapses into unrelieved barbarity required a very rare degree of idealistic fervour from the prospective doctor before they attracted him. There were few of us who regarded war as the Condy's fluid of the blood, and in those days there was completely lacking that "state of mind" which, the truism assures us, more than guns and bombs makes a war. But it did seem that given the proper opportunity there would still be many who would regard war through a cheerful miasma of sentiment and heartiness as the most exciting if the most dangerous of sports. Once the heroic qualities are given their old values it is easy for inexperience to offset the general theme of post Great War books and their insistence on its monotony, brutality, and futility, with the reflection that the persons most sensitive to that aspect of war are the most likely to write of it. Personal conflict tended to disappear during the Great War and with it that element of excitement and even pleasure which is said to accompany killing in the war "state of mind." Writers on older wars not infrequently used to make more of it and novelists, writing on the Crimea, had described their hero's unexpected delight in the pastime of bayonetting Russians. More recently that connoisseur of equestrian delight, Alphonso XIII, is reported as rating the cavalry charge high above pig sticking. Experience of neither sport is necessary to feel that he has got the order right.

* * *

Before any war might be expected to attract even the most swashbuckling of medical non combatants a return of both the picnic and the accompanying personal conflict elements would seem to be necessary. The wars of the last two years have seen some return of personal conflict, and although the picnic element has been conspicuously lacking, dug-outs and mud have not occupied much space in the reports. It is easy, however, to understand Abyssinia not being a compelling magnet to the only casually adventurous. Addis Ababa was given no attractions to compensate for the penalty of being mistaken for an Italian by a wandering tribesman, all work and no play in that city seemed to alternate unhappily with no work and no play. In Spain, on whichever side of the wobbling boundary line the sick are tended, the relaxation of the warrior appears to be given its due importance. Except for Madrid, Spain from the press provides this year of grace with its equivalent to the Balkan wars of some quarter of a century ago.

* * *

It was with feelings of remorse, repentance and regret, that the other day I overheard a library subscriber ask for books on war wounds, as he intended shortly to leave for Spain. Had two years of opportunity for work unobtainable elsewhere than on the battlefield and for a variety of other lively experiences been let pass? I took tally of those bolder contemporaries who, realising that at any one time there is only one spot on the globe where important things are happening, had chosen Spain. My acquaintance is not large nor representative, but an exhaustive tot up found me with personal knowledge of one medical worker in Spain, the journalist brother of a friend who enlisting to drive ambulances was last heard of as medical superintendent of a base hospital. It seems we are not the stuff our seniors were.

INTERNATIONAL HEALTH OFFICE

THE proceedings at the May session of the permanent committee of the International Health Office included consideration of new researches in cholera yellow fever epidemic encephalitis tularæmia bovine tuberculosis and the deratisation of ships The delegate for the United Kingdom was Dr M T MORGAN of the Ministry of Health

CHOLERA

For the rational prophylaxis of cholera it is essential to know whether vibrios isolated from carriers are true cholera vibrios capable of causing cholera Some years ago the committee suggested that the following two questions should be the object of researches in order to clear up this problem :—

(1) What are the characteristics of true cholera vibrios and notably with what antigens should an agglutinating serum be prepared for it to be completely specific for the pathogenic vibrios ?

(2) Are vibrios which are not agglutinable by specific anti-cholera sera capable of causing cases or epidemics of cholera and must they therefore be taken into consideration from the point of view of prophylaxis ?

The comprehensive researches carried out in India under the direction of the Consultative Committee for Cholera of the Indian Research Fund Association have thrown a light on these questions

For these researches agglutinating sera of pure type O were used obtained by injection of a rabbit with heated dried antigens furnished by Bruce White and Gardner The strains employed were the original type Inaba and the type called variant of Ogawa representatives of Group I of the classification of Gardner and Venkatraman. This vibrio possesses the fermentative properties for sugars which characterise type I of Heiberg ; fermentation of mannose and of saccharose no fermentation of arabinose Its reaction to cholera red is positive and the Voges-Proskauer reaction, modified by the addition of napthol A is negative It does not hæmolise goat's blood

The two Japanese strains Inaba and Ogawa show all these biochemical characters, but from a serological point of view they have a distinct individuality Thus for diagnosis two sera prepared respectively from these two strains or more generally a bivalent serum, must be used

The vibrios which are not agglutinable by O type serum cannot be classified into a small number of serological groups, and among the vibrios which had been isolated from clinical cases of cholera none was found in any series of cases from an epidemic outbreak. These vibrios thus do not appear to produce epidemics ; and for this and other reasons their introduction among the antigens used for the preparation of standard serum would not be justifiable But certain vibrios possessing the characteristic biochemical reactions and inagglutinable by O type serum are agglutinated by serum O prepared from the "rough form of the same strains. When a vibrio is agglutinated below the significant titre by smooth" serum O it is thus necessary to try for agglutination with rough serum O

Colonel Taylor's report tends to show that the vibrios which are not agglutinable by O type serum which have been isolated from clinical cases of cholera are not the true pathogenic agent responsible for these cases : the true cholera vibrio may have escaped discovery and the non-agglutinable vibrio which had been isolated may belong to a type which is perhaps present in the intestine of a fraction of the healthy population

Many of the strains which are not agglutinable by O type serum and which are not isolated from clinical cases of cholera show H agglutination However some vibrios isolated in the recent researches from clinical cases of cholera of which some gave and others did not give typical biochemical reactions showed H agglutination only

It seems then that in the actual state of our knowledge it is not yet possible to use O type sera exclusively for the diagnosis of pathogenic cholera vibrios

YELLOW FEVER

Two special questions were examined in connexion with the danger of the spread of yellow fever One relates to the measures applicable to persons making use of an international air line within the confines of a country ; this circumstance is comparatively rare and is generally governed by internal regulations but it was regarded as advisable to admit provisionally that the precautions laid down in Article 42 of the Convention might be required The other question is that of aerodromes normally used only for the purpose of refuelling and situated in regions in which, although there are no actual cases of yellow fever, such infection might exist It was suggested that this particular class of landing place might be exempted from such of the conditions imposed in anti amaryl aerodromes which are only required for the possible embarkation of passengers who might have been in contact with cases of yellow fever —e g screen quarters In this way the very heavy costs to the governments concerned for the complete equipment of "anti-amaryl aerodromes would be reduced The Committee reserved this suggestion for closer examination at the next session

With regard to methods of mosquito destruction the committee considered those previously discussed which make use of sprays with a pyrethrum base as satisfactory if suitable doses are used It does not recommend the use of hydrocyanic acid

Continued researches in South America have confirmed the existence of the so-called jungle yellow fever in rural areas in which there are very few inhabitants and no *Aedes ægypti.* The problem lies in discovering other possible hosts than man and other blood-sucking vectors than the aedes On the first point it should be noted that of 88 monkeys captured in yellow fever areas of Africa 20 have shown positive mouse-protection test while this test has always been negative in monkeys coming from Kenya as well as from India and Java From a practical point of view there is unanimous agreement that in the silent" areas in which protection tests are positive an active search must be made to detect clinical yellow fever In Great Britain vaccination against yellow fever has been performed with a pantropic virus attenuated by tissue-culture without the addition of immune serum Observations made on 65 cases would seem to justify the use of the virus in this manner It seems in particular that repeated passage through Rhesus monkeys does not increase the virulence and consequently a return to a virulent form need not be feared. It does not appear to be liable to become neurotropic. Experimental infection of mosquitoes by this virus circulating in the blood of humans or monkeys has not yet been effected.

EPIDEMIC ENCEPHALITIS

Epidemics of encephalitis occur in Japan more or less every year in certain prefectures A commission appointed in 1933 to study this disease from all aspects has arrived at important results The disease is similar to the so called St Louis encephalitis prevalent in the United States It has been transmitted to monkeys by inoculation of the cerebral matter of dead persons, and then to the mouse which is the most receptive laboratory animal. The virus can be maintained by passage through mouse brain. It is obtainable from the brain of patients only from the fourth to the tenth day of illness; the blood is virulent during the first days. Infection may take place by droplets of the naso-pharyngeal secretions; experimentally, infection has been produced by the nasal route. Mosquitoes (*Culex tritæniorhyncus, Culex pipiens*) which can remain infective for a month have been successfully infected by causing them to bite patients. Mice have subsequently been infected by the bite of these mosquitoes or by inoculation of ground-up mosquitoes. The infection of man by mosquito bite has, however, not yet been demonstrated.

TULARÆMIA

Tularæmia has made its appearance in Central Europe and in Turkey in Europe. The first case in Lower Austria was notified in 1925 and the second in September, 1936, followed by about a hundred cases in the adjoining district on the Moravian frontier. Then the disease appeared in Southern Moravia at the end of October, 1936. Thirty to forty-five days before the first human cases, a great mortality was reported among field voles and then among hares. From Moravia the disease spread to the southern part of Slovakia. Up to April 15th of this year there were 391 cases in Czechoslovakia, of which 277 occurred in Moravia, 110 in Slovakia, and 4 at Prague (caused by hares coming from infected districts). The forms were glandular and ulcero-glandular, and occasionally typhoidal; there were also oculo-glandular forms, with slight ocular lesions. Contact with hares was proved in 90 per cent. of cases; the others were caused by contact with wild rabbits and mice. The initial lesion was sometimes a small skin wound, sometimes the mouth or throat, when the illness began with angina accompanied by extensive œdema. Notification of tularæmia has been made compulsory in Czechoslovakia. The sale and export of hares from the infected districts is prohibited and sick wild hares and rabbits must be destroyed and their carcasses burned.

In Turkey, the first cases were discovered in June, 1936, among soldiers in the garrison at Luleburgaz, in Thrace, and continued to occur up to the end of September; in all, there were 150 cases, 133 among soldiers and the others in villages sometimes far from the focus. The forms were generally glandular or oculo-glandular (32 per cent.), none were typhoidal. *Bacterium tularense* was isolated from human cases. The infection would appear to come from wild rabbits, but may have been transmitted by insects in some cases. As a diagnostic measure, agglutinating sera have been distributed in the district; convalescents and wild rabbits will be critically watched. The preparation of a vaccine and therapeutic serum is proposed. The source of origin of the disease in Turkey, as in Lower Austria, is unknown.

BOVINE TUBERCULOSIS

Since 1910 an active campaign has been carried on in the United States to eradicate bovine tuberculosis. The pasteurisation of milk is rapidly increasing, and tuberculous lymphadenitis has practically disappeared from the clinics and hospitals of the large cities. The tuberculin test is being applied to an increasing number of animals, those which react being slaughtered. In 1936 out of 22,918,038 animals tested only 0·7 per cent. reacted. For a sample of the population totalling 47,128,112 inhabitants, 87·5 per cent. of all the milk was pasteurised; but probably 40 per cent. of the total population, mainly in rural districts and small towns, still use raw milk. In cities of 500,000 inhabitants or more, 98 per cent. of all milk sold is pasteurised.

DERATISATION OF SHIPS

Observations made in many countries confirm the fact that fewer ships now have rats on board. Only a few (particularly, it appears, with mixed cargoes) still harbour rats to any considerable extent. The committee is persuaded that the normal application of the system laid down in Article 28 of the Convention of 1926 is sufficient to maintain this favourable situation, and that, except where actual danger to the port may arise from the condition of a ship, the prescribed periods should normally be observed. These periods, when necessary, include the additional *month allowed for return to the "home port."* It goes without saying, however, that in order to have the advantage of this allowance, the return voyage *should not in fact exceed one month.*

THE MECCA PILGRIMAGE

A brief report on the general conditions of the pilgrimage of 1937 was presented by the President of the Quarantine Board of Egypt. The number of pilgrims in 1937 was much larger than that of the previous year; the sanitary condition in the Hejaz seems to have been very satisfactory and the pilgrimage could be declared "healthy."

In accordance with the provisions of the new Statute of the Health Organisation of the League of Nations, as previously ratified by the committee, the latter held on May 13th and 14th the first annual assembly of the Advisory Health Council of the League of Nations in which the delegates of Bulgaria, Hungary, and Liberia and a member of the International Labour Office participated, as well as the president and several members of the health committee and the Director of the Health Section of the League of Nations. At this meeting the work already done by the Health Organisation and work under consideration for the future were discussed.

VIENNA

(FROM OUR OWN CORRESPONDENT)

THE FIRST INTERNATIONAL SHORT-WAVE CONGRESS

OVER 400 scientists attended the first International Short-wave Congress held here during the second week of July. The honorary presidents were Prof. d'Arsonval, Senator Marconi (who has died since the congress), and Prof. Zenneck. The organisation of the congress was entrusted to Dr. Liebesny of Vienna. The meetings took place synchronously in three sections—on physics, with Prof. Thirring presiding, on biology, with Prof. Scheminzky, and on medicine, with Dr. Liebesny—and all were well attended. There was also in connexion with the congress a very interesting exhibition of historic and industrial importance. Only certain of the papers of medical or biological interest can be described here. Dr. Schliephake (Giessen), the pioneer in the subject, delivered a lecture on the Indications and Effects of Short-wave Therapy. He stated that purulent infections of the skin, the accessory nasal sinuses, the pleura, and the lungs were the chief field for their application. Dr. Maragliano (Genoa) has found short waves, especially when combined with X rays, useful in arthritic and rheumatic disease Prof Wintz (Erlangen) has used them extensively in acute inflammations in gynæcological diseases especially in hypofunction of the ovaries with very satisfactory results In the ensuing discussion numerous speakers were enthusiastic about the excellent effects of short waves in these conditions but all stressed the necessity for weak athermic doses in acute conditions In the section on biology this fact was explained in several papers dealing with the reaction of living tissues towards the high frequency short and ultra-short waves Thus Dr Rajewsky (Frankfort) and Prof Dalton (London) stated that their experiments tend to prove that the waves have a specific action upon tissue elements which cannot be attributed simply to a rise of temperature Also Prof S Jellinek s paper on electropathology proved that the cell changes visible under the microscope after the application of short waves differ from those caused by the heat of electric currents. Short wave therapy has been tried in many and varied pathological conditions Thus Dr T Meyer (Paris) has used them in angina pectoris and Dr Colarizi (Rome) in infantile paralysis The latter treated 20 children directing the waves to the cervical and lumbar portion of the medulla Only the early stages seem to respond favourably; none of his patients died Dr H Wolf (New York) Dr Merdinges (Cernauti) and Dr Wainder (Cracow) agreed with the claims for good results reported by the other speakers Short waves have also been applied successfully in frost bite chronic appendicitis and endocrine disorders. Prof Ruete (Marburg) reported on their value in dermatology He remarked on the good effect obtained by their use in the dangerous cases of nasal and labial furuncle in pyodermia and in axillary abscess He has had unexpectedly good results in the intractable scleroderma Dr Lux (New York and Vienna) uses them against rheumatism especially when caused by oral sepsis or dental sepsis He believes that formation of antibodies is thereby favoured as has been proved in treating furunculosis Chronic suppuration of the middle ear especially that persisting after a radical mastoid operation, has been very favourably treated in Neumann s clinic by Dr Löwy and Dr Moller Worse results were obtained in unoperated cases and in chronic catarrhal deafness Buchband and Weissenstein had very good results in acute coryza Ocular inflammations have been successfully treated by Gutsch (Berlin) Hausmann (Vienna) and trachoma by Krausz (Lodz, Poland)

In the biological section Dr Raol (Berlin) reported on his experiments aiming at influencing the sex glands Moderate doses of short waves he found do not injure the gonads nor does irradiation of an embryo disturb its normal development even during the period of maturation Different results have however been obtained by irradiating germs and seeds of plants Here distinct changes were found varying according to the duration and intensity of the dose Probably the thermic effect had also a considerable influence but a specific action of the short waves themselves cannot be excluded Dr Liebesny stressed the point that high frequency currents generally and short waves especially exerted their influence chiefly by non thermic action All sorts of electric currents have a specific action upon living tissues short waves having it even in weak doses It is important to prevent thermic action especially in acute inflammations and in tuberculosis Dr Krasny Ergen (Stockholm) could show that athermic short waves produce—in biological fluids or tissues—a regular chain like apposition of smallest particles If a very strong current is applied producing heat these regular lines are disturbed Dr Wolf explained how weak doses cause a dilatation of the capillaries without increasing the flow in the arteries whilst high doses paralyse the capillaries and increase the supply of blood with consecutive hypermia of the irradiated tissues Dr Weissenberg showed that short waves alter the electric resistance of the skin high doses reducing it low doses increasing it

THE AUSTRIAN RÖNTGEN SOCIETY

Originally intended to be a purely Austrian affair the second annual meeting of the Röntgen Society was attended by a large number of leading foreign radiologists owing to the fact that the Short-wave Congress immediately followed it Besides the 120 Austrian radiologists 350 eminent scientists from 17 different countries took part in the proceedings and presented numerous interesting papers and contributions so that this meeting also assumed the quality of an international congress

The meeting confined its work to two main subjects—early diagnosis and differential diagnosis by X rays and X ray therapy especially in inflammatory conditions Dr Lenk (Vienna) discussed the problems of diagnosis in disease of the liver and spleen He prefers to give the contrast medium by intravenous injection rather than by mouth. Prof Sgalitzer (Vienna) emphasised the difficulty met in differentiating between inflammatory and neoplastic conditions of organs such as the brain or the alimentary canal Repeated examinations may be required and irradiation may cause an inflammation of the tissues to subside and thus facilitate the discovery of a tumour otherwise hidden Dr Vallebona (Genoa) explained his method of examining tissues at various depths which he calls stratography Dr Strauss (Vienna) demonstrated the telecord, an apparatus for prolonged observation of the heart contractions, separating systole from diastole Dr Fleischner (Vienna) pointed out that the hilum changes observed in pulmonary tuberculosis need not always be tuberculous a fact also emphasised by Dr Herrnheiser (Prague) and by Prof Maragliano (Genoa) Cancerous and especially precancerous conditions of the alimentary canal have attracted the attention of many radiologists Dr Zdansky (Vienna) insists on the necessity of protracted observation before a definite diagnosis can be upheld He said that as a rule the X rays cannot settle a diagnosis but only assist the clinician in doing so although, as Dr Presser and Dr Pape (both of Vienna) pointed out the radiologist is more often fortunate in his diagnostic findings Dr Herzog (Ostrawa) discussed early diagnosis of kidney disease He has convinced himself that calculi in the ureter or renal pelvis are more easily discernible during the attack of colic than in the quiet intervals

The second theme—X ray therapy—was introduced by Dr von Wieser (Vienna) He set out the biological principles of the action of X rays upon the tissues and explained why different methods may produce similar results It is now accepted as a fact that inflammatory processes may be resolved and cut short by a proper dose of X rays Prof Wintz (Erlangen) on the therapeutic value of X rays in gynæcology said that there were two methods—either to apply weak doses directly to the inflamed tissues or to use stronger doses on the ovary so as to interfere temporarily with its function and thus cause the inflammation to subside Dr Gajzago (Budapest) agreed with him and described some excellent results in acute mastitis Other remarkable results with irradiation were obtained in osteomyelitis by Dr Palugyay, especially in the early stages, in paronychia by Dr Spitzenberger, who prefers this method to that of operation, in cases of chronic tonsillitis by Dr Windholz, whose results were often, he thought, as good as those of tonsillectomy. Dr Frank even advised their use in acute tonsillitis with or without abscess formation. Dr Wochner has obtained excellent results in acute glaucoma. Operation could not always be avoided, but it rapidly alleviated the severe headaches. Dr Hammer advises X rays as the best and most satisfactory treatment for all cases of neuritis and neuralgia, the effect is rapid and lasting.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

A BILL TO NATIONALISE PHYSICIANS

FOR some time the Federal Government has been putting pressure on various medical groups to develop medical practice plans along what might be described as more socialised lines. This pressure became more manifest at the convention of the American Association in Atlantic City early in June, when Senator Lewis spoke in closed session before the House of Delegates, giving there a message which purported to come from the President. On July 28th Lewis, who is the senior senator from Illinois, introduced into the Senate a Bill the significance of which cannot yet be wholly grasped. The preamble to this Bill is as follows:—

> "To provide medical aid for the needy,—and the stricken with illness who are unable because of poverty to provide treatment and hospitalization,—also to establish all licensed medical practitioners as civil officers of National Government."

Its most important provisions are that all physicians and surgeons who practise medicine or surgery in the United States or its territories would become federal civil officers, any such physician or surgeon, and any hospitals which render medical aid, would be authorised to make charges and submit accounts to the Social Security Board, it would be unlawful for any physician, surgeon, or hospital to refuse to render aid as provided, and it would be unlawful for any person fraudulently to represent that he is impoverished for the purpose of receiving this aid. The Social Security Board would have the power to make rules and regulations, and the Bill also proposes to authorise the appropriation of such sums as may be necessary to carry out its provisions. Finally there is a punitive provision that any person violating the regulations would be deemed guilty of a misdemeanour and upon conviction would be fined not more than $1000 or imprisoned not more than three months, or both.

There is apparently no likelihood that this Bill will be enacted into law, nor is there any expectation, even by its author, of this happening. It has apparently been introduced in the manner of many other recent proposals with the aim of gauging the attitude of the public and developing from that reaction a practicable programme of social security legislation. This Bill embodies, nevertheless, many proposals which have as yet received little attention in the more responsible legislative bodies. The licensing of medical practitioners as civil officers of the National Government is a new proposal.

There are, furthermore, many features of the Bill needing to be clarified before enactment would be reasonably feasible. The definition of "impoverished" is especially difficult in this country. Enormous differences exist between the economic and financial standards in some of the big cities as compared with outlying rural districts. Even though the Bill would authorise appropriations of money to carry out its provisions, the amount needed for this purpose would require extensive study if it is not to remain a matter of pure speculation. Its introduction would seem to be the first round in the fight between those who wish to use legal enactment to change the economics of medical care of the indigent, and those who would let such change develop by the natural evolution of trial and error. No doubt this particular Bill is stillborn but similar proposals will be introduced in later sessions.

PARIS

(FROM OUR OWN CORRESPONDENT)

PIRQUET TESTING FOR ALL FRENCH CHILDREN

THE title of a recent report to the Academy of Medicine by Robert Debré and Marcel Lelong was "Treatment of the Initial Period of Tuberculosis in Childhood, Fundamental Element of the Anti tuberculosis Campaign." One of their main points was that every child whose tuberculin reaction has just become positive should at once be assured rest. In this sentence special importance was attached by the speakers to the words *just become positive*, for the crucial fact is not the positive reaction in itself, but its recent origin. After the presentation of this report, the Academy unanimously adopted a resolution according to which the tuberculin skin test should be repeated in children as long as it is negative, at least once a year by the family doctor or, failing him, by the school medical officer. A certificate on this point should be required of every child at the beginning of each scholastic year, the change in the skin reaction being the sole certain means of detecting the onset of the primary infection in the child and of taking indispensable prophylactic and curative measures.

TYPHOID FEVER AND THE GENERAL PRACTITIONER

The recent discussion on typhoid fever, held in Paris under the auspices of the Assises Nationales de Médecine, reflected the opinions of general practitioners throughout France about this disease. According to a report issued to the medical press there is a widespread belief among French practitioners that typhoid fever has diminished greatly except in certain Mediterranean ports. A corrective to this cheery picture came from the chairman, Prof H Vincent, who reminded his audience that between 1919 and 1921 and between 1926 and 1933—a total of twelve years—there were 23,246 deaths from typhoid fever throughout France. Considering how defective notifications of the causes of death are, this figure must be taken as an under-estimate. While the efficacy of vaccination by injection was generally accepted, the voices in favour of vaccination by the mouth were certainly not unanimous. Much of the typhoid morbidity on the French littoral was held to be the result of shell fish infections, and it was noted that while there are public health measures in connexion with oysters, the culture, distribution, and sale of other shell fish such as mussels and cockles are still unhampered by any official regulations. This is the more deplorable as the old custom of eating mussels raw is still in vogue and the haphazard harvesting thereof is an avocation indulged in by all and sundry

BUDAPEST

(FROM OUR OWN CORRESPONDENT)

EFFECT OF POISON GAS ON WATER

Dr Albert Telbisz a surgeon in the Hungarian army in a public lecture on poison gas, said that although the subject has been very widely discussed little has been said about its effects on the water supply It is only recently that the importance of this question has been recognised and intensive research is now in progress It has been found that if a gramme of mustard gas enters the stomach of a horse either in water or in the fodder the animal dies in three or four days; 0 10 g mustard gas is not necessarily deadly but recovery may be prolonged. Gases containing irritating arsenical compounds cause similar symptoms.

Generally speaking gases that act as vapours do not poison water for they disintegrate and lose their properties It is possible that an unusually large cloud of high concentration may act upon the surface of the fluid—usually milk or water—long enough for it to absorb so much gas that its consumption is dangerous. The conditions necessary to maintain such high concentration for several hours is only possible under exceptional conditions.

Mustard gas and certain other compounds, however may make the water very dangerous for consumption particularly in lakes or other standing water while in rivers the dilution is so rapid and great that the possibility of poisoning can be excluded. In experiments Dr Telbisz established that the greater part of the gas sinks to the bottom, but on the surface there is also a very thin, slightly opalescent layer The middle part remains entirely free of the gas and tests in animals proved that it is drinkable and quite harmless but it is impossible to separate it from the upper layer The presence of mustard gas in water is disclosed by its odour and colour Upon the least suspicion it should be boiled filtered through active coke, and left to stand for an hour It can be rendered safe by treating it with eau de javelle or chloramine—0–7 c.cm per litre After this procedure the water has a slight odour of garlic but it can be safely used. Water rendered poisonous by arsenic compounds or by lewisite cannot be consumed at all and it should not be used even for washing

VITAMIN C IN TYPHOID FEVER

At a meeting of the Budapest Royal Medical Society Dr K Farkas read a paper on the value of vitamin C in treating enteric fever He regards the organism of typhoid as "hypo-ergic —that is to say it tends to produce hæmorrhage and leucopenia The cause of these changes is to be found both in increased hæmolysis by the spleen and in partial avitaminosis In typhoid cases he discovered very low values for the blood platelet count and this may be of diagnostic importance, for it is low even if the blood picture is not otherwise characteristic. It is useful also in prognosis the cases with a very low count having a bad outlook particularly when it cannot be influenced by treatment Farkas explains this as the outcome of hypovitaminosis and therefore for typhoid in general, but especially in cases with very low counts he suggests the energetic administration of vitamin dosage Of these he recommends vitamin C as most important, because of its effect on the evolution of infectious diseases and the reported action of vitamin C in increasing the platelets and the reticulocytes His own cases confirm these facts and seem to show that ascorbic acid in proper doses may be valuable

ENVIRONMENT OF THE NERVOUS CHILD

Dr O Joseph Vértes late director of the secondary school for nervous children says that a sick child should never see that he is the object of great anxiety or attention for this at once makes him feel that he is an unfortunate As soon as the interest and the condolences cease the symptoms themselves may also disappear by 'neglecting' him one suggests to him that he is not seriously ill. Besides this it is also an important therapeutic measure to ensure that he observes a systematic daily routine not being allowed to be idle even for a minute and thus he is not allowed time even to think of being sick. The central factor however is the education of will replacing weakness by a definite aim But the difficulty is that among all the methods of the education of will there is not one about which it could be safely said that it would certainly be effective

After the critical economical and financial stress of the post-war years the number of nervous children rose very sharply and this height is maintained even now 17–18 years beyond the end of the war It can be established that in every secondary school the proportion of children who cannot be kept amongst normal children is at least 1 per cent. *Let us select these children and let us open for them special institutes* says Dr Vértes The number of nervous children in Budapest amounts to 1200–1300 It would be profitable he concludes, to provide for them a separate institution because this is a question affecting the great men of the future, since he believes that it is only this type that develops the creative and inventive mind.

AERIAL AMBULANCES

The International Aerial Ambulance Conference in Budapest was held here in the second half of June under the presidency of Prince Bibesco the official delegate of Rumania. There was also a demonstration of the aerial transport of the wounded, and an exhibition of equipment was held at the Mátyásföld airport. Among other things they showed how whole hospitals may be transported by aeroplane how field ambulances with physicians and nurses may be landed in regions afflicted with flood, and supplying them with food drinking water drugs dressings &c. and how ropes may be taken to sinking ships. A Swedish and three French aeroplanes flew to Szeged and returned with a sick transport to Budapest. One of the French planes 5 minutes after landing was again in the air with another load of patients The most interesting part of the show was the landing by parachute of a physician and three nurses The aeroplane flew to a height of 500 metres, and after circling dropped first the packages containing equipment, and then the personnel who landed safely

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NEWTON ABBOT HOSPITAL.—The foundation-stone has been laid of the Webster memorial nurses home at this hospital.

CORRESPONDENCE

CLINICAL EVIDENCE AND STATISTICAL PROOF

To the Editor of THE LANCET

SIR,—May I, as a clinician, be allowed to say a few words on the sub heading of Dr Howard Collier's letter in your issue of July 24th? I do not propose to blow my horn about the busmen's gastric dis orders about which I know very little I wish rather to question the main theme of Dr Collier's letter—namely, that statistical analysis demonstrates "the reliability of clinical observation and the validity of clinical inference" The writer seems so convinced of this that one is almost given the impression that Dr Bradford Hill has been wasting his time

No one will deny that the accumulated experience of a shrewd clinician often leads him and those he teaches to something very near the truth—truth sometimes expressed in the most delightful aphorisms, for which we cannot but be grateful More often than not, however, this judgment from experience is applicable only to relatively simple problems, and is very liable to err May I give a few examples from my own experience Most of us have been taught that in Pott's paraplegia "children always get better under conservative treatment, adults do not, so you must operate on them" Some years ago R W Butler and I analysed a large series of cases—and we found that the recovery rate was almost independent of the age We were astonished Another example "the prognosis in sacro iliac tuberculosis is bad," though no one can say just how bad Two other surgeons and myself are now engaged on an analysis of a large series of cases, and I can say with confidence that the prognosis is, at any rate, not too bad—probably good according to some standards The exact figures will be available next year One more "the recovery period in infantile paralysis is about two years" Here we got into trouble some time ago, for one experienced orthopædic surgeon was sure that four years was nearer the mark, another equally experienced, said nine months There was only one thing to do—namely, analyse a number of cases and find out I now have the answer, which will shortly be published by the man who did the work, and it does not confirm the opinion derived *solely* from clinical observation

The truth of the matter is that most of us detest statistical analysis and welcome any excuse for dispensing with it I am sorry that Dr Collier has tried to damp down the salutary stimulus administered to many of us by Dr Bradford Hill in those excellent articles in your pages which have now appeared in book form In clinical work we have our loves and hates We like this operation, therefore our results are good, we dislike Smith's way of treating a certain condition therefore it is bad We rather fancy that A causes B—and lo! it does so Only the cold impersonal evidence of statistics can dispel this emotional bias We must learn how to tackle the more simple statistical problems ourselves and hand over the difficult ones to people like Dr Bradford Hill who really know something about statistics and may, incredible as it may seem, enjoy such work

I am, Sir, yours faithfully,

H J SEDDON

Royal National Orthopædic Hospital Stanmore
Middlesex August 8th

PASTORAL PSYCHOTHERAPY

To the Editor of THE LANCET

SIR,—I am sorry to have to descend to elementary facts but some who have written to you recently, and who apparently think that unqualified practice is desirable, seem unaware of them To those who have benefited from a scientific education it is self evident that science is an integration of a large number of component sciences so dovetailed together as to make the whole unassailable One of these sciences is medicine and a part of it is psychotherapy This accumulation of knowledge is the result of individual labours which have each added its microscopical or macroscopical contribution It is apparent to any who care to study the history of any science that no one has ever contributed anything to it who has not had an adequate education in the basic principles which support the whole Pasteur who burst so dramatically through chemistry into medicine was really a highly qualified chemist It is not therefore from any personal sense of grievance that the qualified physician resents an inrush of the unqualified but merely that such an invasion cannot possibly advance knowledge and may easily retard it What unqualified person has contributed anything of value to medicine? Compared with the sacrifices which have been gladly made by the qualified the history of quackery shows a sordid passion for notoriety and gain (All this I had always believed to be obvious, but it is apparently not so to those who blind themselves with ignorant prejudice) The right to any field does not depend on theories—whether it be the psychobiological theory or any other—but upon competence and the capacity to advance knowledge It is obvious therefore that "the study of religion" cannot justify an invasion into scientific medicine or form a basis for psychotherapy as one of your correspondents suggests The profoundest truths of psychopathology or indeed the whole of medicine *may* be found in the Gospels, but if they are not comprehensible or available as knowledge how can they replace the knowledge acquired in proper medical training? Dr Hubble seems to have a great capacity for drawing conclusions with absolutely no evidence to support them He accuses me of showing an "anti religious bias" This I emphatically deny—nothing I have written could possibly convey such an idea (although I should show a similar reaction and might be accused of an "anti legal bias" if the lawyers started practising medicine) I believe that there is plenty of noble work that the churches can do but they will not do it by competing with the osteopath, the cheiropractor, and the man who sells twopenny packets of cure-all pills in the market place

Again Dr Hubble dubs me a "thorough going Freudian" which indeed I am not (although knowing Freud's contributions to medicine I cannot regard it as other than complimentary) Had he read the book I quoted in a previous letter he might have found that I have a great admiration for Pavlov and could be called a thorough going Pavlovian with as much justification

Both of your correspondents' letters show a certain childish animosity and contempt for the profession, which they seem to have in common with another who has written defending the Guild It may be "fashionable" to encourage unqualified practice and to disparage one's profession but for myself I am content to remain one of those quaint old fashioned folk who refrain from doing so and still find it an honour to be a member of it

I am Sir, yours faithfully

Harley street W August 7th. CLIFFORD ALLEN

THE OVER TREATMENT OF GONORRHŒA

To the Editor of THE LANCET

SIR,—As I have been interested in this subject for many years permit me to add the following to the present correspondence on the subject. It is eleven years since I decided that modern treatment of gonorrhœa in the male was surgically unsound and that vasotomy was in every way to be preferred The surgically unscientific character of the procedures of to-day has been stressed in this correspondence and Mr Nicholls asks what are we to do about it In a letter to your columns in 1928 (1 883) I pointed out that the treatment was at fault and that the better remedy was vasotomy In August of that year I argued the point more fully at the International Congress of Hygiene held at Dublin More recently (*Med World Lond* Dec 13th 1935) I exposed fully the unsoundness from a surgical standpoint of the procedure of to day and the futility of massage of the prostate and seminal vesicles. My answer to Mr Nicholls is as I wrote in 1928 :—

> If my remarks will induce the venerealogists skilled in surgical work to practise vasotomy in the treatment of acute gonorrhœa I am confident they will prove this treatment of acute gonorrhœa to be one of the greatest blessings of the day to afflicted mankind and that the campaign against gonorrhœa instead of being deemed as it is now to have failed, will be successful."

But Sir I have no doubt that in spite of the excellent results obtained by vasotomy many will consider the mere fact of operating as over treatment

I am Sir yours faithfully

Upper Wimpole-street August 9th. J F PEART

RADIO INTERFERENCE BY ELECTRO MEDICAL EQUIPMENT

To the Editor of THE LANCET

SIR,—The Committee of the British Standards Institution is inquiring into radio interference caused by electro medical equipment We have been asked to endeavour to obtain replies to the following questions :

(*a*) Has mechanical rectification any advantage over valve rectification in any particular cases and if so what are the advantages and in what cases do they arise ?

(*b*) How far is it desirable apart from economic considerations to use spark apparatus for diathermy ?

We shall be glad if any of your correspondents could give us any information that would help us to answer these questions

We are Sir yours faithfully

RUSSELL J REYNOLDS
GEORGE F STEBBING

Lambeth Hospital Brook street S E. August 5th.

UNDESIRED PUBLICITY

To the Editor of THE LANCET

SIR,—In view of my position as chairman of the British Pharmaceutical Conference held last week in Liverpool and also of the fact that my company is one of the English manufacturers of *p* aminobenzene sulphonamide I was a little concerned at the fact that a paper read by one of our research chemists Mr W J C Dyke M Sc was made on the following day the subject of headlines in many of the daily papers In an interview published in the *Observer* of August 1st I have endeavoured to put the matter in its proper light It is entirely contrary to the views of responsible manufacturers of products which are often the subject of considerable research that these products should be made the subject of anything in the nature of a popular stunt

I am Sir yours faithfully

T EDWARD LESCHER

Managing Director Evans Sons Lescher and Webb Ltd
Liverpool, August 3rd

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Capt F MacEwen O B E to *President* for course

Surg Comdrs T G B Crawford to *Dorsetshire* (on comm g); R Buddle to *St Angelo* W E Heath to *Curacoa*

Surg Lt Comdr T F Crean to be Surg Comdr

Surg Lt Comdrs E J Mockler to *Sheffield* (on comm g) W N Beach to *Drake* for R N Hospl Plymouth H L Belcher to *Pembroke* for R N B

Surg Lts L R Norsworthy to *Dorsetshire* (on comm g); W S Miller to *Challenger* (on recomm g) W D Gunn to *Pembroke* for R N Hospl Chatham ; L R Caldwell to *Victory* for R N B and to *Enchantress*

Surg Lt (D) W A Dickie to *Wildfire* and to *Pembroke* for R N B

N L Parry to be Surg Lt (D)

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt W E Pycraft to *Curacoa*

J A Atkinson entered as Prob *Surg Lt (D) and* attached to list 2 of the Tyne Division.

ARMY MEDICAL SERVICES

Col R W D Leslie O B.E. (late R.A.M C) to be Major-General and appointed Deputy Director of Medical Services for the Northern Command at York.

ROYAL ARMY MEDICAL CORPS

Maj S Fenwick, M C is placed on the h p list on account of ill health

Capts to be Majs : L R. S MacFarlane H A Ferguson and J J O'Dwyer

Short Service Commission : Lt (on prob) J A N Nicoll is restd to the estabt

ARMY DENTAL CORPS

Short Service Commission : Lt C O B Stibbs to be Capt

TERRITORIAL ARMY

N N Porterfield (late Lt New Zealand Mil Forces) to be Capt (Substituted for notification *in Gazette* July 13th) (*Vide* THE LANCET July 24th)

Lts W G Brander and J S Minett to be Capts

G R Mackay (late Offr Cadet Aberdeen Univ Contgt (Med Unit) Sen Div O T C) to be Lt

E N Rees to be Lt

Lt M A Townshend (late R Fus.) to be Lt

ROYAL AIR FORCE

Flight Lt S B S Smith is promoted to the rank of Squadron Leader

INDIAN MEDICAL SERVICE

Major General E A Walker C.B has vacated the post of Director of Medical Services in India

Lt Gurbuxsh Singh relinquishes his temp commn.

COLONIAL MEDICAL SERVICE

Dr W S Haynes has been appointed Medical Officer Kenya Dr A W H. Smith (Trinidad) becomes Medical Superintendent Mental Hospital British Guiana and Dr P B Wilkinson (St Helena) Medical Officer Hong Kong

OBITUARY

EDWIN SMITH, M D Lond

THE death last week of Dr Edwin Smith after a long illness removes a personality well known both to medicine and the public For the past seventeen years he had served two of the largest metropolitan districts as coroner Born at Melton Mowbray in 1870, son of an Inland Revenue officer of the same name, Edwin Smith was educated at Perth Academy and Dundee High School, entering St Thomas's Hospital with an entrance scholarship in science He went on to take a number of other scholarships and prizes, culminating in the Treasurer's gold medal before qualifying in 1892, when he held a house appointment at the hospital and demonstrated practical surgery while reading for his London degrees He then built up a large general practice in Balham, where he was district medical officer to the L C C

DR EDWIN SMITH

At the same time he read for the Bar and in 1908 was called at the Middle Temple, and three years later became lecturer on forensic medicine and toxicology at St Thomas's Hospital He edited the medico legal sections in the "Practitioner's Encyclopædia of Medicine and Surgery," and did a good deal of writing on medical evidence and workmen's compensation His first appointment as coroner was as deputy for Westminster, and in 1922 he was placed in charge of North East London and later of the Western District As coroner he attracted notices by his frank comment on the treatment of sick people, but his criticism was directed rather towards the conditions under which patients failed to obtain adequate relief than against the individuals limited by these conditions While he recognised the value of the confident outlook in recovery from illness, he had on occasion at inquests to warn Christian Scientists that they should consider where their teaching was leading them Remarks on the home treatment of panel patients provoked a challenge on the part of insurance practitioners to meet them and justify what was regarded in newspaper headlines as his sweeping condemnation but he refused the challenge, remarking that the issue could only be solved by an impartial inquiry He was himself a vice president of the National Medical Union and an honorary member of the Edinburgh Medical Guild His insistence on the need to meet the growing dangers of motor traffic on the roads led him to make many practical suggestions for their avoidance, some of which have since been adopted He spoke from long experience as he was one of the first men in the country to hold a driving licence and motoring remained his chief hobby, shared in his lighter moments with an aptitude for making objects of illusion which led him to join, and later to preside over, the Magic Circle He was a keen violinist and treasured a fine example of a Testori fiddle In 1910 he married Edith Catherine, youngest daughter of Mr H N Dyer, who survives him with two daughters and a son who has recently qualified from St Thomas's

Sir Bernard Spilsbury writes "When Dr Edwin Smith was appointed coroner to the north eastern district of London, to be transferred later to the western district, he had gained considerable experience as a deputy coroner But he had also the great advantage of having been in practice as a medical man for many years, and he thus had a thorough understanding of the difficulties which can arise between doctor and patient, and which are so often ventilated in the coroner's court Whilst he could be a candid critic of conduct which he regarded as detrimental to the interests of the patient, he was constantly engaged in court in explaining to the friends the difficulties under which the doctor laboured, and he was thus instrumental in removing many causes of misunderstanding His gift of sympathy was one of Dr Smith's chief assets as a coroner It was seen especially when a suspected person gave evidence before him The witness had every opportunity of placing his conduct in the most favourable light, and the coroner would often offer suggestions to the witness to help him out of a difficulty As one of the earliest motorists Dr Smith had a practical acquaintance with driving problems, and he was well equipped to deal with the often very difficult cases of road fatalities He was kindness and courtesy personified, and he maintained the high tradition which is associated in this country with the office of coroner "

REGINALD FRANCIS JOWERS, F R C S Eng

Mr Jowers, who died on August 7th at Hove in his seventy sixth year, had spent his whole life in Brighton, where he became a surgeon of wide reputation Educated at Winchester and St Bartholomew's Hospital, he qualified in 1885 and for several years held resident appointments at St Bart 's and the East London Hospital for Children In 1888 he took the fellowship and in the following year was appointed assistant surgeon to the Sussex County Hospital, retiring as consultant in 1922 after 33 years' service He was also consulting surgeon to the Victoria Hospital at Lewes, the Eliot Memorial Hospital at Haywards Heath, and the Brighton Home of Rest for Nurses During the war he was attached to the 2nd Eastern General Hospital with the rank of lieut colonel, R A M C Early in his surgical career he described in our columns a case of perforated gastric ulcer successfully treated by laparotomy, and gastric surgery became his principal interest and the subject of several communications to the Brighton and Sussex Medico Chirurgical Society, of which he became president Mr Jowers married in 1898 Violet, daughter of Leadham Hough, C B E , and leaves his widow with a son and four daughters His recreations were those of the countryside, fishing, shooting, and golf

MEDICAL NEWS

University of Cambridge

The Gwyneath Pretty studentship and the Nita King research scholarship have been awarded to Dr J Hart Mercer

University of London

The following have been recognised as teachers of the University Mr D W D Northfield teacher of surgery at the London Hospital medical college; Mr R C Brock teacher of surgery at Guy's Hospital medical school; Dr R W B Ellis teacher of children's diseases at Guy's Hospital medical school Dr C P Symonds, teacher of medicine at Guy's Hospital medical school; Mr A E *Porritt teacher of surgery at St Mary's Hospital medical* school; Mr A. W Kendall, teacher of surgery at King's College Hospital medical school Mr A S Moore teacher of dental surgery at King's College Hospital medical school

Prof T B Johnston, who has held the University chair of anatomy at Guy's Hospital medical school since September 1919 having been appointed superintendent of Guy's Hospital on the resignation of Mr Eason the chair has been replaced by a part-time chair to which Prof Johnston has been appointed as from Oct 1st 1937 Prof Johnston has relinquished the office of dean and in his place Mr T J Evans M.A has been appointed

It has been decided to institute a University readership in biochemistry tenable at the Lister Institute of Preventive Medicine It was also decided that students who have passed the B Sc (household and social science) examination be exempted from the second examination for medical degrees Part I and that those who have passed the M.B B.S examination be exempted from examination in pathology and bacteriology at the B.D.S examination

The University studentship in physiology has been awarded to J P Quilliam of University College and the University medal at the M.B B S examination to H. W C. Fuller of King's College Hospital.

University of Glasgow

A course of six lectures on some aspects of medical *ophthalmology will be given in the Tennent Memorial* Building Church-street Glasgow on Tuesdays in September and October at 4 30 P M On Sept 7th and 14th Prof A J Ballantyne will speak on hypertension vascular sclerosis and renal disease On Sept 21st and 28th Dr *John Marshall will speak on diabetes, and on Oct 5th and* 12th Dr I Chesar Michaelson will discuss diseases of the central nervous system All interested are invited to attend

Combined Hospitals University Entrance Scholarships

As a result of the examination held for the university entrance scholarships offered by St Bartholomew's Hospital medical college and Guy's Hospital and St Thomas's Hospital *medical schools the following* awards have been made —

H V Morgan (Gonville and Caius College, Cambridge scholarship at St Bartholomew's Hospital
L W Smith (Sidney Sussex College Cambridge) exhibition at St Barthol mew's Hospital
G E H Enderby (St John's College Cambridge) scholarship at Guy's Hospital
G T G Thomas (Gonville and Caius College Cambridge) exhibition at Guy Hospital
J L Pinniger (St Edmund Hall, Oxford) scholarship at St. Thomas's Hospital
M G *Smith* (Emmanuel College Cambridge) exhibition at St. Thomas's Hospital

A Pavlov Memorial

The large biological station being built at Pavlovo (formerly Koltushi) in memory of the late Prof I P Pavlov is practically completed The department of evolutionary physiology of the Leningrad branch of the All Union Institute of Experimental Medicine is being transferred to Pavlovo where it will be housed in a laboratory equipped with the most up-to-date appliances for research directed by Prof L A Orbeli

The Royal Society of Medicine

The William Gibson research scholarship for medical women has been awarded to Dr Nancy E G Richardson who proposes to carry out research on carbohydrate metabolism in pregnant and lactating women in relation to the principles secreted by the anterior lobe of the pituitary

St Mary's Hospital

The Queen will open the new extension at this hospital on Wednesday Nov 10th It contains 66 bedrooms available for patients of moderate means in need of hospital treatment and was in the main made possible by an anonymous donor whose donations during the past few years for the new nurses home and the new wing now amount to over £110 000

Bristol Royal Hospital

When the amalgamation of the Royal Infirmary and the General Hospital is completed the name by which the city's one great hospital will be known is the Bristol Royal Hospital. It is hoped that the Eye Hospital and the Children's Hospital will shortly join the two major institutions It is hoped to *effect* the *amalgamation* without an Act of Parliament

Fellowship of Medicine and Post Graduate Medical Association

The following courses in preparation for the M.R C P examination will take place clinical and pathological evening course at the National Temperance Hospital (8 P M. Tuesdays and Thursdays, Sept 7th to 23rd at 8 P M) chest diseases at the Brompton Hospital (5 30 P.M Sept 6th to Oct 2nd); chest and heart diseases at the Royal Chest Hospital (8 P M. Mondays Wednesdays and Fridays Sept 13th to Oct 1st); neurology at the West End Hospital for Nervous Diseases (afternoons Sept 20th to Oct 2nd) Courses in physiology and anatomy in preparation for the primary F R C.S. examination will be given from Sept 1st to Nov 22nd at 5 30 and 8 P.M. respectively on Mondays, Wednesdays and Fridays The following post-graduate courses have been arranged in children's diseases suitable for the D C.H examination at the Infants Hospital (Sept 20th to 25th); plastic surgery (Sept 15th and 16th) proctology at the *Gordon* Hospital (Sept 20th to Oct 2nd) A week-end course in ophthalmology suitable for general practitioners will take place at the Royal Westminster Ophthalmic Hospital (Sept 25th and 26th) *Detailed syllabuses may be* obtained from the Fellowship of Medicine 1 Wimpole street London W 1 The courses are open only to members and associates

Fourth International Pædiatric Congress

This congress will be held in Rome on Sept 27th–30th under the presidency of Prof Spolverini Three main problems of interest to pædiatrician will be discussed The first neuropsychic diseases in pædiatrics from the clinical and social points of view will be opened by Prof Jundell (Stockholm) Prof Glanzmann (Berne) and Dr Allen (Philadelphia) with Dr Dingwall Fordyce (Liverpool) also taking part The second mineral and water metabolism during early infancy and its relationship to artificial feeding will be introduced by Prof Noah Morris (Glasgow) Prof McQuarrie (Minneapolis) Dr Spermasky (Moscow) and Dr Czape (Budapest) The third subject is to be the problems of infantile tuberculosis in three aspects: the modern study of the ultra virus introduced by Prof Dufourt (Lyons) Prof Cohen (Brussels) and Prof Valtis (Athens) contagiousness on the part of the infant by Prof Wallgren (Gothenburg) Dr Kissel (Moscow) and Dr Capon (Liverpool) prophylaxis and therapy by Prof Noeggerath (Freiburg) Dr Chester Stewart (Minneapolis) and Dr Armand Delille (Paris) In addition to the numerous communications and visits to the pædiatric institutions in the neighbourhood and to the monuments of ancient Rome a tour has been arranged to Naples Capri and Pompeii extending over three days and following immediately the conclusion of the congress Further information may be obtained from Dr Leonard Findlay secretary of the British committee

Third International Congress for Medical Post-graduate Study

From August 21st–25th this congress will take place at Berlin Further information may be obtained from the secretary, Prof C Adam, 7, Robert Koch Platz, Berlin, N W 7

Kent Hospitals

Kent County Council is planning to spend £1,247,000 on reorganisation of the county's hospital services

Cameron Hospital, West Hartlepool

The final plans for the extensions to this hospital have been submitted to the Ministry of Health and a grant of three-quarters of its cost has been made by the Commissioner for Special Areas

Extension of North Middlesex Hospital

Middlesex County Council are considering proposals for the modernisation and extension of this institution on which it is proposed to spend £2,000 000 With the further 2000 beds to be provided it is said that the hospital will be the largest in the country

Reedyford War Memorial Hospital

Lord Derby opened this hospital at Nelson on July 31st The hospital is well equipped, and the nurses home is a separate building £20,000 has been raised for the hospital, over £6000 annual subscriptions being subscribed voluntarily by the workers

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Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane road, W

WEDNESDAY August 18th —3 P.M. clinical and pathological conference (surgical)

THURSDAY —3 P M operative obstetrics

FRIDAY —3 P M clinical and pathological conference (obstetrics and gynæcology)

Daily 10 A.M to 4 P M, medical clinics surgical clinics or operations obstetrical and gynæcological clinics or operations

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Vacancies

For further information refer to the advertisement columns

Adelaide Institute of Medical Science —Neale Research Pathologist £900

Altrincham, St Anne's Home —Res Surg O £200

Barnsley Beckett Hosp and Dispensary —Jun H S £200

Bedford County Hosp —H.S at rate of £150

Belfast Royal Maternity Hosp —Res H S at rate of £100

Birmingham Children's Hosp —Res Surg O £175

Birmingham Selly Oak Hosp —Res Gynæcol and Obstetrician £700

Blackburn Royal Infirmary —Cas O £175

Bradford City —Asst. City Pathologist £500

Bradford Municipal General Hosp St Luke's —H P s and H S s, each at rate of £150

Bradford Royal Eye and Ear Hosp —H S £180

Bristol University Preventive Medicine Department Laboratories —Asst. Clin Path £400

British Empire Cancer Campaign, 11 *Grosvenor crescent S W* —Studentship £300

Cardiff King Edward VII Welsh National Memorial Association Area Asst Tuber Phys £500 Res M O £350 Two Asst Res M O s each £200 Also three Half time Asst Tuber O s each £250

Carlisle City —Asst M O for Maternity and Child Welfare £600

Carlisle Cumberland Infirmary —Two H S s each at rate of £100

Central London Ophthalmic Hosp Judd street, W C —Asst Surgeon Pathologist £105 Also Sen and Jun H S s at rate of £120 and £100 respectively

Chichester West Sussex County Mental Hospital —Third Asst. M O £350

Derby Derbyshire Royal Infirmary —Gynæcological H S and Emergency Anæsthetist, £150 Also H.S £150

Doncaster Royal Infirmary —Cas H S, at rate of £175

Dublin Mercer's Hosp —Hon Visiting Surgeon

Ealing King Edward Memorial Hosp —H S to Spec Depts Also Cas H S each at rate of £150

Eastbourne St Mary's Municipal Hospital —Res H S £150

East Ham Memorial Hosp Shrewsbury road E —H P., at rate of £150

Erith U D C —Asst M O H and Asst School M O £500

Folkestone Royal Victoria Hosp —Jun Res M.O at rate of £120

General Lying in Hosp, York road Lambeth, S E —Jun Res M O, and Anæsthetist at rate of £100

Glasgow University —Lecturer in Pathological Biochemistry £700

Great Yarmouth General Hosp —H S £140

Guildford Warren road Hosp —Res Asst M O, at rate of £375

Hertford County Hosp —H P at rate of £150

Hove General Hosp —Jun Res M O £120

Huddersfield Royal Infirmary —Cas O at rate of £200

Ilford Borough —Asst Dental Surgeon £450

Ipswich East Suffolk and Ipswich Hosp —H.S £144

Leamington Spa Warneford General Hosp —Res Jun H.S and Cas O at rate of £150

Leicester City Mental Hosp Humberstone —Deputy Med Supt £800 Also Third Asst Res M O £350

Leicester Royal Infirmary —Res Anæsthetist at rate of £150 H S, two H P s Sen Cas O each at rate of £125 Also Jun Cas O at rate of £100

Liverpool David Lewis Northern Hosp —Surgical Tutor and Registrar Also Medical Tutor and Registrar

Liverpool Sanatorium, Delamere Forest Frodsham —Sen Asst. to Med Supt £350 Also Jun Asst to Med Supt £225

Lochgilphead Argyll and Bute District Mental Hosp —Res Asst M.O, £300

Manchester Ancoats Hosp —Asst Pathologist £300 to £350

Manchester City —Deputy Med. Supt for Abergele Sanatorium, £500 Also Second Res Asst. M O for Baguley Sanatorium £350

Manchester Duchess of York Hosp for Babies —Sen and Jun Res M O s at rate of £125 and £75 respectively

Manchester Park Hosp Davyhulme —Sen Res M O £350

Manchester Royal Children's Hosp Pendlebury —Asst M O and Res M O each at rate of £150

Market Drayton Cheshire Joint Sanatorium —Res H P £250

Miller General Hosp, Greenwich S E —Cas O at rate of £150 Also H P and H.S, each at rate of £100

Nelson Hosp Merton S W —Res H S at rate of £150

Newcastle upon Tyne Hosp for Sick Children —Hon Asst Surgeon to Throat, Nose, and Ear Dept

Newcastle upon Tyne, Royal Victoria Infirmary —Res Surg O, £300

Northamptonshire —Temp Asst M O at rate of £600

Norwich Norfolk and Norwich Hosp —Res Surg O, £250

Nottingham Children's Hosp —Res H P at rate of £150

Perth City —M O H £800

Plymouth City General Hosp —Jun Asst M O, at rate of £250

Plymouth Prince of Wales's Hosp —Hon Aural Surgeon and Hon Med Reg H S

Plymouth Prince of Wales's Hosp Greenbank road —H S, at rate of £120

Portsmouth Royal Hosp —Fourth H.S, at rate of £130

Preston and County of Lancaster Royal Infirmary —Res Surg O £300 Also H.S to Eye Ear Nose and Throat Dept, at rate of £150

Prince of Wales's General Hosp N —Res Jun H P and two Res Jun H S s each at rate of £90

Queen Charlotte's Maternity Hosp Marylebone road N W —Res Anæsthetist at rate of £100 Res Anæsthetist and Dist Res M O at rate of £90 Also Asst. Res M O at rate of £80

Queen's Hosp for Children Hackney road E —Res M O at rate of £200

Rhondda Urban District Council —Asst M O £500

Rochdale Infirmary and Dispensary —Second H S at rate of £150

Rotherham Hosp —H.S for Ophth and Ear, Nose and Throat Depts £150

Rowley Regis Borough Council —Deputy M O H and Asst. School M O, £600

Royal Cancer Hosp Fulham road S W —Two Asst Radiologists each £350

Royal Eye Hosp St George's-circus S E —Sen H S and two Asst H.S s at rate of £150 and £100 respectively

St Leonard's on Sea Buchanan Hosp —Hon Neurologist.

Salop County Council (Medical Inspection of School children and Maternity and Child Welfare Schemes) —Asst M O £500

Sheffield Royal Infirmary —Cas O £150

Shrewsbury Royal Salop Infirmary —Res Surg O £250 Also Res H S at rate of £100

Southampton County Borough —Sen Asst School M O and Asst M O H £650

Southampton, Royal South Hants and Southampton Hosp —Cas O and Res Anæsthetist and H S to Ear, Nose and Throat Dept each at rate of £150

Southend Municipal Hosp Rochford —Asst M O £325

Southern Rhodesia Medical Service —Government M O £600

Staffordshire County Council. —Res Asst. M O for Wordsley Public Assistance Institution at rate of £300

Staffordshire General Infirmary —H.S at rate of £200 Also H P and Cas O at rate of £150

Stockport Stepping Hill Hosp —Res Asst M O at rate of £350

Stoke-on Trent Longton Hosp —H S at rate of £180

Torquay Torbay Hosp —H S £175

University of London, W C —External Examinership

Victoria Hosp for Children Tite street Chelsea S W —Locum Cas O at rate of £200

Wakefield Stanley Park Mental Hosp —Asst M O £650

Warwick King Edward VII Memorial Sanatorium Hertford Hill —Jun Asst M O at rate of £350

West London Hosp Hammersmith road W —Res Anæsthetist at rate of £100

Weston super Mare General Hosp —Res H P £150

Windsor King Edward VII Hosp —Res M O £200

NOTES, COMMENTS, AND ABSTRACTS

A CONSULTATION IN THE REIGN OF ANTONINUS PIUS

(FROM A CORRESPONDENT)

IT is always difficult to project ourselves into the conceptions of our ancestors and notably is this the case with their *ideas about the relationship and* functions of arteries and veins. He who will read the first few pages of Harvey's De Motu Cordis in which he reviews some of the doctrines held on this subject by his predecessors will, I fear not be materially enlightened on the question for in truth the conspectus which he affixes as a preliminary to his own examination of the facts is a confused and vagrant piece of writing, quite unlike the vivid terseness which he employs to express his own experiments and conclusions. Yet if theory was defective among the ancients practice distinguished sharply and efficiently between the functions and uses of arteries and veins as the episode related by Aulus Gellius in his Eighteenth Book goes to prove.

In the height of summer I had left Athens for the country house of Herodes at a place called Cephisia. There I was confined to my bed by a sharp attack of fever with acute diarrhœa. The philosopher Calvisius Taurus [whose pupil at Athens Aulus Gellius at that time was] with some of his followers came out from Athens to see me and found the physician who was attending me sitting at my bedside. He related to Taurus the symptoms and progress of my disorder and in the course of conversation remarked that I was already improving saying to Taurus You can satisfy yourself of this ἐὰν ἅψῃ αὐτοῦ τῆς φλεβός which in Latin certainly means If you will put your finger on his vein. The learned scholars who were with Taurus were shocked at the ignorance which could call an artery a vein and regarded him as a very inefficient physician. But Taurus observed quietly I am sure Sir that you know very well the difference between arteries and veins that the veins do not pulsate and are examined only for the purpose of blood letting while the arteries show by their movement and pulsation the height and degree of the fever. You did not of course speak in ignorance but only followed the everyday usage for I have known many men who use the two words erroneously. I venture to believe that you are a better doctor than philologist and will cure your patient well and quickly.

After this conversation I began to reflect that not only physicians but any intelligent layman ought to make himself acquainted with the more obvious facts of the structure and functions of the body and devoted my spare time to dipping into medical books. From them I learned much in the way of practical general knowledge and in regard to arteries and veins what I should express in the following terms. A vein is a container ἀγγεῖον the doctors call it of blood intermixed and combined with the breath of life and there is less of this in it than of blood an artery is a container of the breath of life intermixed and combined with blood and in it there is more of the breath of life and less of blood. Pulsation is the natural and spontaneous expansion and contraction in the heart and arteries. The old Greek physicians gave the definition thus Pulsation is the spontaneous diastole and systole of the heart and arteries.

I have given a somewhat abbreviated version of Gellius's remarks but I hope that I have preserved the charm of the picture of the Greek sage with his class holding a consultation with the general practitioner at the bedside of a favourite pupil. It is clear that the ancients attached considerable clinical importance to the study of the pulse which they rightly regarded as a good indication of the state of bodily health. The translation of the definition of a vein and an artery is rendered difficult by Gellius's use of the term spiritus naturalis. I have called it the breath of life but to the Greeks and after them to the Romans it connoted rather a vital essence which pervaded the body mixing with its substance and its humours. One other point is interesting Gellius says he *learnt from the medical books much* non ab isto humanitatis usu aliena. In this phrase he uses the term humanitas in the same sense in which the Scotch still speak of the 'humanities meaning as he says elsewhere "education and training in the liberal arts."

MASCULINE AND FEMININE CHARACTERISTICS

WHEN we speak of a given person as being masculine and of another as feminine in type the words have a definite meaning; yet the characteristic to which we refer is not reducible to a single or readily measurable feature of mind or body. It is rather a composite picture. Why should we say that a certain man makes upon us the impression of being very masculine? He might have a deep low pitched voice a vigorous growth of hair on the face a muscular and tough physique with a strong development of chest and shoulders. Or in more elusive ways, his character might suggest masculinity; he might be strong and silent—a being who preferred action to words; he might be indifferent to pain or hardship physically courageous, aggressive and difficult to intimidate or to deflect from his purpose. He might be a natural leader—a type whom other men readily follow. Or he could be judged by his interests. These might be centred in sports and mechanical things rather than in personal matters he might be lacking in vanity and indifferent to what other people thought about him. The picture could be supplemented in numerous other ways and a similar list of typically feminine characteristics could likewise be compiled.

On reflection, however it will be recognised that every one of these features with the exception of those pertaining to the secondary sexual characters might taken singly be possessed by a person of the opposite sex who taken as a whole and judged in the light of the total personality might be regarded as typical of that sex. In short though we are in no doubt as to what we mean when we speak of a man being of a masculine or a woman of a feminine type the quality we are describing is almost impossible to fit in to a simple formula or single measurable characteristic. But the difficulties of the subject have not deterred investigators from trying to reduce it to quantitative and metrical terms. Lewis Terman and Catharine Miles believe that it is possible to assess a person's degree of masculinity or femininity by means of an index figure or rating comparable to that by which his intelligence is expressed. In a considerable volume[1] which contains no less than 92 tables and several graphs wherein we hear much of correlation coefficients and standard deviations they describe the evolution of tests elaborated for this purpose during the last 12 years and their application to large and heterogeneous groups of people.

A close study of these tests does not convince us of their value. The mathematical elaboration of their results gives an appearance of scientific accuracy which is clearly misleading if the tests themselves are badly conceived and if they fail to differentiate the essential characteristics under investigation. The tests used are questionnaires the answers to which are

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[1] Sex and Personality. By Lewis M. Terman and Catharine Cox Miles. London: McGraw Hill Publishing Co. [illegible]

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Folkestone Royal Victoria Hosp—Jun Res M O at rate of £120

General Lying in Hosp , York road Lambeth S E—Jun Res M O and Anæsthetist at rate of £100

Glasgow University—Lecturer in Pathological Biochemistry £700

Great Yarmouth General Hosp—H S £140

Guildford Warren road Hosp—Res Asst M.O , at rate of £375

Hertford County Hosp—H P at rate of £150

Hove General Hosp—Jun Res M O £120

Huddersfield Royal Infirmary—Cas O at rate of £200

Ilford Borough—Asst. Dental Surgeon £450

Ipswich East Suffolk and Ipswich Hosp—H S £144

Leamington Spa Warneford General Hosp—Res Jun. H S and Cas O at rate of £150

Leicester City Mental Hosp , Humberstone.—Deputy Med Supt , £800 Also Third Asst. Res M O £350

Leicester Royal Infirmary—Res Anæsthetist at rate of £150 H S , two H P s Sen Cas O each at rate of £125 Also Jun. Cas O at rate of £100

Liverpool David Lewis Northern Hosp—Surgical Tutor and Registrar Also Medical Tutor and Registrar

Liverpool Sanatorium, Delamere Forest Frodsham—Sen Asst. to Med. Supt , £350 Also Jun Asst to Med Supt £225

Lochgilphead Argyll and Bute District Mental Hosp—Res Asst M O , £300

Manchester Ancoats Hosp—Asst Pathologist £300 to £350

Manchester City—Deputy Med Supt. for Abergele Sanatorium £500 Also Second Res Asst M O for Baguley Sanatorium £350

Manchester Duchess of York Hosp for Babies—Sen and Jun Res M O s at rate of £125 and £75 respectively

Manchester, Park Hosp Davyhulme.—Sen Res M O , £350

Manchester Royal Children s Hosp , Pendlebury—Asst M O and Res M O each at rate of £150

Market Drayton, Cheshire Joint Sanatorium—Res H P £250

Miller General Hosp Greenwich S E—Cas O at rate of £150 Also H P and H.S , each at rate of £100

Nelson Hosp Merton S W—Res H S at rate of £150

Newcastle upon Tyne Hosp for Sick Children—Hon Asst Surgeon to Throat, Nose, and Ear Dept

Newcastle upon Tyne, Royal Victoria Infirmary—Res Surg O , £300

Northamptonshire—Temp Asst M.O at rate of £500

Norwich Norfolk and Norwich Hosp—Res Surg O £250

Nottingham Children s Hosp—Res H P at rate of £150

Perth City—M O H £800

Plymouth City General Hosp—Jun Asst M O at rate of £250

Plymouth Prince of Wales's Hosp—Hon Aural Surgeon and Hon Med Reg H S

Plymouth Prince of Wales's Hosp , Greenbank road—H S at rate of £120

Portsmouth Royal Hosp—Fourth H S , at rate of £130

Preston and County of Lancaster Royal Infirmary—Res Surg O £300 Also H S to Eye Ear Nose and Throat Dept at rate of £150

Prince of Wales s General Hosp N—Res Jun H P and two Res Jun H S s each at rate of £90

Queen Charlotte s Maternity Hosp Marylebone road N W—Res Anæsthetist at rate of £100 Res Anæsthetist and Dist. Res M O at rate of £90 Also Asst. Res M O at rate of £80

Queen s Hosp for Children Hackney road E—Res M O at rate of £200

Rhondda Urban District Council—Asst M O £500

Rochdale Infirmary and Dispensary—Second H S at rate of £150

Rotherham Hosp—H S for Ophth and Ear Nose and Throat Depts £150

Rowley Regis Borough Council—Deputy M O H and Asst. School M O £600

Royal Cancer Hosp Fulham road S W—Two Asst Radiologists each £350

Royal Eye Hosp St George s-circus S E—Sen H S and two Asst H S s at rate of £150 and £100 respectively

St Leonard s on Sea Buchanan Hosp—Hon Neurologist

Salop County Council (Medical Inspection of School childre and Maternity and Child Welfare Schemes)—Asst M O £500

Sheffield Royal Infirmary—Cas O £150

Shrewsbury, Royal Salop Infirmary—Res Surg O £250 Al Res H S at rate of £160

Southampton County Borough—Sen Asst School M O and A M O H £650

Southampton Royal South Hants and Southampton Hosp—C O and Res Anæsthetist and H S to Ear, Nose Throat Dept each at rate of £150

Southend Municipal Hosp Rochford—Asst. M O £325

Southern Rhodesia Medical Service—Government M O £

Staffordshire County Council—Res Asst. M O for Word Public Assistance Institution at rate of £300

Staffordshire General Infirmary—H.S at rate of £200 H P and Cas O at rate of £150

Stockport Stepping Hill Hosp—Res Asst M O at rat £350

Stoke-on Trent Longton Hosp—H S at rate of £180

Torquay Torbay Hosp—H S £175

University of London, W C—External Examinership

Victoria Hosp for Children Tite street Chelsea S W—L Cas O at rate of £200

Wakefield Stanley Park Mental Hosp—Asst M O £650

Warwick King Edward VII Memorial Sanatorium H Hill—Jun Asst M O at rate of £250

West London Hosp Hammersmith road W—Res Anæ at rate of £100

Weston super Mare General Hosp—Res H P £150

Windsor King Edward VII Hosp—Res M O £200 consists of the collaborators results in 1930 and previous years. Statements have been submitted by: the Centre des tumeurs de l'Université de Bruxelles, Belgium contributed by Prof J Murdoch; the Liverpool Radium Institute by Dr P Malpas; the Marie Curie Hospital, London by Dr Elizabeth Hurdon; the London County Council's Radium Centre for Carcinoma of the Uterus, by Sir Comyns Berkeley; the Institut du Radium de l'Université de Paris by Dr Lacassagne and Radiumhemmet Stockholm by Dr Heyman. The committee invites directors of clinics and others interested in this subject to communicate with Dr Heyman with a view to their future participation.

PROBLEMS OF HEALTH AND INDUSTRY

A SERIES of lectures given by Sir Percy Alden on subjects which specially concern the Ministry of Health has been reprinted with a survey of the problems of industry in general and of coal and agriculture in particular[1] The importance of child nurture is emphasised as the most important of all State functions, and an account is given of what the government and local authorities are doing and still have to do in recognition of this responsibility Both in this connexion and in relation to the adolescent and adult, stress is laid on the paramount factors of ample and properly balanced feeding and physical training As ancillary and closely related circumstances housing and social security—including health and unemployment insurance—are dealt with separately The problems of industrial development and organisation which are much less clearly defined and understood are explained and discussed in the last four chapters

The merit of the work is that it is the product of a mature mind which has been engaged for many years not only in the contemplation of social problems here and abroad, but also in the practical application of progressive ideas to legislation and local administration On the whole Sir Percy Alden seems to be satisfied with the trend of modern social service and industrial organisation At least, he expresses no serious dissatisfaction with our national policy, although he does comment on the defects of the insurance medical service While this series of lectures is not and was clearly not intended to be very profound its publication provides in convenient form a survey of the most important social issues with which civilised people are faced and furnishes, especially in the chapters on industry facts which are not accessible to the non-specialist reader

A NORWEGIAN GOITRE SURVEY

ON the map Norway looks like one vast seaboard so deeply indented by fjords that it is a little difficult to conceive of isolated, inland areas enjoying none of the benefits of proximity to the sea. Yet there are such areas, and one of them, Modum in the county of Buskerud has of late become so notorious as a goitre centre that on the initiative of Prof. Johan Holst and Dr Sverre Kjölstad it was subjected to a goitre survey in 1934 and 1935 The team responsible for this survey have now published their findings in *Norsk Magasin for Lægevidenskapen* for July 1937 The clinical field work and the laboratory analyses in Oslo entailed expenses which were borne by several public bodies including the Nansen Fund.

Altogether 4560 of Modum's 11 400 inhabitants were examined the school children being examined in the schools and the rest of the population by a house-to-house visitation Hunziker's system of examination was adopted the height of each lateral lobe of the thyroid and the horizontal limits of the whole gland at its widest being measured Enlargement of the thyroid was found in 65 6 per cent of the total. It was demonstrable in 78 per cent of the poorer families. The farmers were worse off in this respect than industrial workers, the incidence of goitre being 72 per cent among the former and only 58 per cent among the latter This comparative immunity of the industrial workers was connected with the fact that over 63 per cent of them ate fish at least once a week, whereas only 15 per cent of the occupants of the farms did so The fish-eating component of the community was far better off than the non fish-eating component as far as the frequency of goitre was concerned. The women were worse off than the men, 73 per cent of the former and only 57 per cent of the latter being found to suffer from goitre The highest goitre-rate was found in women who were between the ages of 20 and 29 and who lived on farms The women who had borne children suffered more frequently and from larger goitres than did nulliparæ The analyses of urine drinking water milk and eggs both in Modum and Oslo showed that the iodine content of the urine and drinking water was considerably higher in the latter than in the former Discussing the prophylactic measures to recommend the authors of this survey discuss the comparative merits of introducing an iodine-containing table salt (the *Vollsalz* used in Switzerland) or a comprehensive revolution in the dietary of the community with the import of sea fish, feeding cattle with seaweed and the use of seaweed as a manure As the effects of such a revolution, if it could indeed be effected, would be slow the simpler and shorter cut to health with an iodine-containing salt is in their opinion the wiser course

CUTANEOUS EPITHELIOMA IN AN ALBINO AFRICAN

NOWHERE is the protective influence of the pigment of the skin more evident than in albino Africans in the tropics and they suffer severely from solar dermatitis. As albinism is comparatively rare however the graver effects of chronic sunburn so well known to Australian dermatologists are uncommon Dr W A. Bullen[1] of the Kenya Medical Service has recently reported a case of cutaneous cancer occurring in an albino woman of the Teita tribe aged about 25

The patient is a deaf mute and mentally defective. She is the youngest of a family of ten, and the only one to show albinism. The father and mother and the patient's only child were of the normal black colour The infant died at the age of four months apparently from marasmus. The patient is a complete albino and shows all the classical signs of that infirmity The Wassermann reaction was negative

When first seen in November 1936 she complained of severe irritation of the skin upon which there were numerous red unbroken patches On some of these patches horns had developed. There were also three "septic" ulcers the largest of which was on the right side of the forehead This ulcer was said to have followed the removal of one of the horns by the patient. By February 1937 there were many more horny excrescences upon the trunk and some of them were ½–3 in. in length. The ulcer on the forehead became more and more infiltrated and by April had developed into a large ulcerating tumour extending from the hairy margin of the scalp to the right orbit Later it was found to have invaded the frontal and nasal bones. Until the last month there were no palpable lymphatic glands but by the middle of April there were evident metastases in the cervical preauricular and suboccipital regions A small ulcer on the back showed infiltration suggestive of malignancy

A portion of the large tumour and one of the horns were sent to the Medical Research Laboratory at Nairobi and Dr F W Vint senior pathologist reported that the large growth was a squamous-celled carcinoma but that the base of the cutaneous horn showed no evidence of malignancy

A similar case was described by T F Hewer[2] of the Sudan Medical Service His patient was a supplied by underlining this instance the four possible answers was found on items has been select squamous-cell reliability in recording dent, type time limit, but the cribed by 50 minutes, and is de- st number certain level of been reported according to Amer nd others purpose of the 'Attitude Inter unsuspected by

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[1] Aspects of a Changing Social Structure Sir Halley Stewart Lecture 1936 By Sir Percy Alden M.A London George Allen and Unwin 1937 Pp 190 4s. 6d

[1] *E Afr med J* 1937 14 80

[2] *Brit J Derm* 1932 44 469

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The first is analysis was incorporated tion A key unded a clinic where psycho- ordinary type using the term in the strict the one which n given to out-patients of the or appropri d students have been trained on bit, pair The staff have given their services and wom it and with great enthusiasm every these four treated at least one patient daily, and masculin ated more The clinic has evolved The test as funds have become available, and the wom plans for execution when means allow in th nts would enable much more work to be is more young psycho-analysts to be trained femin nt work with children must in time be the d into a regular children's department, and a fficer to do the work of secretary, librarian, registrar is perhaps the most immediate need orting on the work for the last ten years, the ectors say that 738 patients have come for consultation nearly half of them between 20 and 30 years old The commonest complaint was anxiety hysteria and after it obsessional neurosis, but nervous disorder of all kinds has been represented. After unsuitables had been weeded out, nearly 600 were placed on the waiting list, and of these 176 have been treated Nearly two thirds of those to whom treatment was offered refused it, for various reasons familiar to psychotherapists, perhaps the f of which was the tragic one of the long dela it could be started Freudian sta arduous and the medical director de report on a case useful unless treatments have b given hysteria the res quite by both analytic ap ical progress ctory peutic progress i n only progress of any observ obsessional neuros aspects in S ca of 17 analytical progress e in 7 progress in S I hysteria neurosis analytica rapeu went hand in han titute number of valual ures, has accumulated le c literature of this

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LAWSON R S M.B MS A M O (II) St James
STEVEN J M M, M D A.M O (II) Highgate
KENT A R R M R C S House Physician St James
FIFE J G M B House Surgeon St Mary Abbots
GODWIN E G M R C S House Physician St. James
FOX RAYMOND M B F R C S Clinical Assistant St Charles,
HOLMES LAURENCE M.B Visiting M O (Temp) and D M O (Temp) Goldie Leigh
CRAIG N S M D Med Supt Mile End
MITMAN MAURICE M D M R C P, Med Supt. River
SEARS W G M D M R C P Med Supt., St Peter s
HEALY J W M D, Deputy Med Supt (II), Southern
CUNNINGHAM A A M D M R C P Deputy Med. Supt (II), Park,
MUIR CLEMENT M R C P Senior A.M O (I) North Western
TAYLOR IAN, M R C.P Senior A.M O (I), South Western
SIMMONS J H M D Deputy Med Supt (II) St Charles,
HURFORD J V M D M R.C P, Senior A.M O (II), Colindale
MCDADE R S C M B Senior A M O High Wood
BROWN W D, M B Senior A.M O (II) St Nicholas
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HUNTER ALEXANDER, M D Deputy Med Supt. (II) Northern
MCENTEE J C J M D M R C P Deputy Med Supt (II) *Grove and*
MASON J H G M D Senior A M O (I) St Olave s

Births, Marriages, and Deaths

BIRTHS

BRAYBROOKS —On August 1st at Sutherland avenue, W, the wife of Dr J R Braybrooks of Thames Ditton of a daughter

FARIS —On July 23rd, at Singapore the wife of Dr D W G Faris Malayan Medical Service of a daughter

JACKSON —On August 4th at Somertrees avenue, Grove Park S E, to Dr Eileen Jackson, wife of W Eric Jackson LL B —a daughter

JAMESON EVANS —On August 2nd the wife of Mr Philip Jameson Evans F R C S of a son

TELEY DAVIDSON —On August 4th the wife of Dr S ateley Davidson Newcastle-upon Tyne of a son

DEATHS

August 2nd at University College Hospital, stian, M R C.S Eng, Surgeon Captain, R N oughborough, third son of the late H Charlton F R.S

ust 4th at ing home in Edinburgh Brown, M formerly of Caterham on, aged

6th D Albon, M D Penna, yswater W

William Charles Edin

venue, Hove Reginald

les Pins Max Herschel B S Lond. M R C S

J J Ross M B Edin A Ross, The Leicester

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d road Upper Norwood E. Edin M.R C S Eng

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ADDRESSES AND ORIGINAL ARTICLES

A VIRUS IN THE ÆTIOLOGY OF RHEUMATIC DISEASES

By G Hardy Eagles M D Toronto D P H

P R Evans B Sc M B Ch B Manch
M R C P Lond

A G Timbrell Fisher, M C F R C S Eng

and

J D Keith * M D Toronto

(From the Bacteriological Department Lister Institute Cheyne Hospital for Children the Arthritic Unit St Stephen's Hospital and King Edward VII Memorial Hospital for Children Birmingham)

Although the possibility of a virus having some part in the causation of rheumatism had been considered by several investigators it was not until 1935 when Schlesinger Signy and Amies published the results of their researches on the virus ætiology of acute rheumatism that any support was given to this interesting hypothesis In earlier work the attempt had been made to infect animals with material from rheumatic patients but convincing evidence of infectivity was not obtained. Recent advances in the study of viruses particularly the use of the high speed centrifuge in obtaining deposits of elementary bodies from virus infected material and the examination of these particles with respect to their morphological characteristics and serological reactions led Schlesinger Signy and Amies to study acute rheumatism from this point of view Relatively pure suspensions of bodies, morphologically similar to elementary bodies from known viruses, were obtained from rheumatic exudates and with these and sera from rheumatic patients agglutination tests were carried out The technique was essentially that used in vaccinia and fowl pox by Ledingham (1931) and in varicella by Paschen (1933) and by Amies (1933) These suspensions were specifically agglutinated by the sera of patients who were suffering from and resisting an acute rheumatic infection Sera of normal persons and of patients suffering from various non rheumatic infections failed to agglutinate the rheumatic suspensions Suspensions of particles were obtained, also from exudates of non rheumatic patients but these while closely resembling the rheumatic bodies in stained films and by dark ground illumination remained unagglutinated by rheumatic sera It was therefore suggested that the bodies found in pericardial exudates of patients suffering from acute rheumatism represented the actual infective agent of the disease

These results opened up a number of interesting and important possibilities within the rheumatic group of diseases It has frequently been suggested on clinical evidence that rheumatoid arthritis is in all probability closely related to acute rheumatic fever their manifestations differing mainly in respect of degree and of age-group in which the infection occurred Chorea has for some time been considered by most competent authorities as an evidence of rheumatic activity It seemed possible that similar technical procedures would throw some light on the probable ætiology of rheumatoid arthritis and chorea and on the inter relationships of the whole group while at the same time extending and corroborating the work on rheumatic fever

Preparation of Suspensions

It seemed reasonable to suppose that active and extensive inflammatory lesions whatever their location in the rheumatic subject should be a source of the causal agent For this reason an extensive and varied search was made with acute rheumatic fever and rheumatoid material and to some extent with material from chorea

I—ACUTE RHEUMATIC FEVER

(*a*) *Pericardial and Pleural Exudates*—As a rule pericardial exudates were obtained at post-mortem from cases in the acute form with pericarditis and effusion Only on rare occasions were they obtained ante mortem Pleural effusions were usually withdrawn during life The necessary precautions for sterility were observed and only rarely were organisms present Contaminating organisms were occasionally cultured but in such cases where the diagnosis of rheumatic fever was unquestioned streptococci were not found

The fluids were taken into 3 8 per cent sodium citrate solution to prevent clotting The shortest possible time elapsed between taking and manipulation and whenever possible the specimens were kept in the cold room during that period

A preliminary spinning at 3000 to 4000 rev per min. removed cells and any fibrinous aggregations after which the supernatant fluids were subjected to centrifugation at 14 000 rev per min. for one hour This resulted in a very small plaque on the bottom of the tubes and an almost clear supernatant fluid This was carefully removed and the deposit thoroughly triturated, using the etched end of a sterile glass rod. It was then thoroughly mixed with the fluid in which they were later to be suspended and redeposited at 14 000 rev per min. This washed deposit was retriturated and mixed with suspending fluid and differential centrifugation at 3000 to 4000 rev per min carried out The final supernatant fluid was removed and stored for morphological examination and serological tests.

This formed the basis of the preparation of all suspensions, additional manipulation, such as grinding with sand, being used only where the nature of the specimen called for it

The most satisfactory fluid for suspensions was found to be saline to which 0·25 per cent formalin was added the particles remaining in even suspension over long periods. M/250 citric acid + disodium phosphate buffer pH 7 1 with NaCl added to 0·85 per cent as used by Salaman (1937) for vaccinia with the addition of 0·25 per cent formalin was also found satisfactory In normal saline spontaneous agglutination of the particles regularly occurred on standing in the cold room

Suspensions from rheumatic exudates prepared in this way showed the typical bluish opalescence by direct illumination observed in suspensions of known virus particles

(*b*) *Joint Fluids*—These were taken from knee joints at the height of inflammatory reaction and maximum effusion Their subsequent treatment varied from that of pleural and pericardial exudates only in that owing to their highly viscous nature it was necessary to dilute them with at least twice their volume with saline or formol saline before centrifugation Unless this was done no deposition of particles was obtained even at 14.000 rev per min

(*c*) *Blood Plasma*—Since the route of infection in acute rheumatism is in all probability by the nasopharynx, after which it becomes generalised, it seemed possible that at the height of primary infection the causal agent might be found in the blood stream 25 to 30 c cm of blood was taken into citrate, and after removing the cells the plasma was treated exactly as exudates Slight deposits were obtained, suspended, and examined

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* Athill Moynihan Research Scholar University of Birmingham

(*d*) *Subcutaneous Nodules*—These were removed as early after appearance as possible and, after macerating, were ground with sand, diluted with suspending fluid, and cleared of coarse material at 3000 to 4000 rev per min The supernatant fluid was then treated in the same way as other materials

(*e*) *Cerebro spinal Fluid*—Cases showing evidence of widespread rheumatic infection were selected and the fluid examined in the usual way for virus bodies About half the total number of fluids examined were obtained post mortem and yielded deposits, the amount of which have a direct relationship to the amount of cellular matter present, thereby giving an impression, which was confirmed on examination, that these consisted of very small cell particles

(*f*) *Fibrin*—The fibrinous exudate in fatal cases of typical "bread and butter" pericarditis was examined in two instances After either preliminary grinding with sand or expressing in a tissue press, the exudate was diluted and centrifugalised Deposits were obtained after prolonged differential centrifugation which resembled those obtained from ordinary exudates This was not surprising, since the loose, fibrinous network contained an appreciable amount of fluid exudate Owing to the fact that this form of pericarditis is found only in very acute cases it should have present large amounts of the infective agent

(*g*) *Ascitic Fluid*—This was examined in only one case in which ascites and general œdema were present It is doubtful whether virus bodies were present, since high-speed centrifugation of 250 c cm yielded only a scanty deposit which agglutinated spontaneously

(*h*) *Urine*—Increased permeability of the kidney, as evidenced by a high Addis count, occurs frequently in active acute rheumatic fever If it is assumed that at this stage virus bodies may be in the general circulation they might also appear in the urine

Two cases were selected In the first the Addis (1925) count was as follows casts, 3000 , W B C and epithelial cells, 36 million , R B C , 4 million , protein, 30 mg The second showed the following count casts, 35,000 , W B C , 11,700,000 , R B C , 8,800,000 , protein, 30 mg urea clearance, 91 per cent Both cases were in a highly active stage as evidenced by acute carditis, active arthritis, and nodule formation

After removing cellular matter, the urine was centrifugalised at 14,000 rev per min In both instances a very minute deposit was obtained and suspended

II—RHEUMATOID ARTHRITIS

(*a*) *Joint Fluid*—When possible early acute cases were selected in which joint fluid was in excess, with marked pain and swelling, but before secondary joint changes had occurred Some degree of elevation of temperature was generally present and the erythrocyte sedimentation rate increased This type of case appeared more likely to show the presence of the infective agent than the more chronic types in which secondary tissue changes have supervened When the disease was well established with hypertrophy of the synovial membrane and fibrinoid degeneration fluid was obtained at arthrotomy The subsequent examination of these fluids did not vary from that of joint fluids from rheumatic fever

(*b*) *Synovial Membrane*—Hypertrophied membrane was removed by synovectomy in the course of operative treatment of suitable cases (Timbrell Fisher 1937) After mincing, grinding with sand, and suitable dilution, coarse particles were removed in the centrifuge at 3000 to 4000 rev per min and the supernatant fluid spun at 14,000 rev per min The deposit was thoroughly washed After differential centrifugation a uniform suspension was obtained In a number of cases the supernatant fluid was filtered through a Berkefeld "V" candle before high speed centrifugation and in most instances the minced membrane was frozen and thawed six times before grinding

As was expected, copious deposits were thrown down by high speed centrifugation, and from these, uniformly dispersed suspensions of particulate matter could be readily prepared

III—CHOREA

Cerebro spinal fluids from typical cases of chorea were examined for the presence of bodies similar to those found in rheumatic material In only one instance could these be demonstrated and a suspension procured The fluid was withdrawn post mortem from a child of eight years with a history of severe chorea for six months No history of rheumatic fever was present either in the patient or her family Severe carditis and subcutaneous nodules were present The fluid was bacteriologically sterile

IV—EXAMINATION OF CONTROL MATERIAL

Pericardial and pleural fluids were obtained from cases of tuberculosis, carcinoma, cardiac failure without rheumatic history, and infections of known bacterial ætiology Joint fluids were procured from simple traumatic injury such as torn semilunar cartilage and from such non rheumatic conditions as tuberculosis and osteomyelitis Synovial membrane was obtained from knee joints with torn semilunar cartilages These were treated in precisely the same way as material from rheumatism

When such specimens were from infective sources suspensions of numberless small particles could be prepared This was not surprising since such fluids must contain large quantities of cell granules and other products of cellular disintegration Normal synovial membrane, when minced and ground also yielded suspensions of similar particles But simple transudates into the pleural or pericardial cavities yielded on high speed centrifugation at best only scanty deposits not comparable in amount with those from pathological exudates No deposits were obtained from normal joint fluids

Examination of Suspensions

MICROSCOPIC

Two methods were used—dark-ground illumination and stained film preparations

When a drop of suspension from rheumatic material was examined by dark ground illumination and a magnification of 1000 diameters, numberless evenly dispersed, very small particles were seen Some difference in size and refractility was observed but the majority of the particles were, as nearly as could be determined by this method, of uniform size and conformed in every way to the description given of them by Schlesinger, Signy, and Amies The larger, more opaque, bodies may represent some phase in the development of the virus if it is assumed that virus is present, or they may merely be the product of cellular disintegration In favour of this latter view it may be significant that a preponderance of these larger forms was found in pathological exudates from non rheumatic sources and in suspensions prepared from such tissue as synovial membrane

Films were stained by Löffler's flagellar method, the modified techniques of Zettnow and Caesares Gil and Morosow's modified Fontana Tribondeau silver impregna tion method In these preparations particles of uniform size and staining could readily be identified When films from control suspensions were examined in conjunction with those from rheumatism it was evident that particles closely *resembling known virus bodies* could be demonstrated in all suspensions whether these had been prepared from rheumatic exudates, from joint fluids in rheumatic fever and rheumatoid arthritis from synovial *membranes, or from non rheumatic control material* In some instances it was not possible to distinguish rheumatic suspensions from non rheumatic As a rule however *a preponderance of bodies of uniform size* and density was met with only in suspensions from rheumatic sources

It must, therefore be realised that on morphological grounds alone these particles cannot be said to have any definite diagnostic significance in rheumatism unless considered in conjunction with serological tests.

SEROLOGICAL INVESTIGATIONS

The microscopic agglutination test using hanging drop preparations in an aluminium ring moist chamber was employed

Mixtures consisting of equal volumes of suspension and dilutions of the sera to be tested were set up left at room temperature, and examined at intervals of two to five days For this purpose transmitted light with a 16 mm. objective and a × 10 ocular was used Each suspension was tested with *sera from cases of the same type of rheumatism* from which it had been obtained and with sera from other types Controls of normal and non rheumatic sera were included and control suspensions were set up with normal sera and sera from the rheumatic group

A positive reaction was indicated by the presence of *small, irregularly shaped highly refractile floccules.* These commonly were present on the first or second day but occasionally did not appear until later The absence of agglutination was shown during the first forty-eight hours by a clear drop and later by the suspension settling out on the bottom of the drop in a thin plaque which presented an *even ground-glass appearance* This was invariable with controls and was used in addition, as an index of suitable density of the suspension.

As an additional control agglutinated and unagglutinated suspensions were from time to time examined by dark ground illumination when the presence or absence of floccules was confirmed

SUSPENSIONS EMPLOYED

Table I contains a list of the suspensions from rheumatic fever rheumatoid arthritis, chorea and from non rheumatic sources which were tested with appropriate sera. These were chosen to cover as wide a range of material and rheumatic activity as possible The agglutination of these suspensions by sera from acute rheumatic fever rheumatoid arthritis and chorea is indicated The failure of these sera to agglutinate the control suspensions is also shown. In many instances the amount of suspension obtained from joint fluids plasma and subcutaneous nodules was too small or of insufficient density to permit of their use as antigens

SERA

These were selected to include patients suffering from rheumatism of various types—acute rheumatic fever acute subacute and chronic rheumatoid arthritis chorea with and without carditis and an occasional case of Still's disease The rheumatic fever group included the disease in all stages although the majority were in the active stage with evidence of widespread infection such as carditis pericarditis and subcutaneous nodules pyrexia and increased erythrocyte sedimentation rate

A control group of sera (see Table V) was studied at the same time This included cases of widely differing clinical diseases but excluding those with any history of rheumatism A number of sera were selected on the basis of high erythrocyte sedimentation rate although Schlesinger Signy and Amies had already pointed out that this feature alone was not correlated with positive agglutination of rheumatic suspensions In this group was included also sera with a very *strongly* positive Wassermann complement fixation reaction and a number from pyrexial states of non rheumatic origin

TABLE I

Suspensions tested for Agglutination

Number of suspension	Material from which suspension was prepared.	Disease	Agglutination with serum from—		
			RF.	RA.	Uncomplicated chorea.
1	Pc fluid.	Fatal RF	+	+	+
			+	+	+
3	Fibrin from pericardium	„	+		
	Pc fluid		+		
5			+		
6	Fibrin from pericardium.		+		
7	Pc. fluid	„	+		+
8			+	+	
9			+		
10	Joint fluid	RF	+		
11	Pleural fluid.		+		+
12			+		
13			+		
14	Joint fluid	Early RA	+	+	
15				+	
16		Subacute RA	+	+	
17	Joint washings.	Chronic	0		
18	Synovial membrane.	Subacute		+	
19	Cerebro-spinal fluid	Chorea with carditis and nodules	+		+
20	Pc. fluid	Terminal effusion intestinal hæmorrhage cor bovinum	0		
21		Bacterial endocarditis	0		
22	Pleural fluid	Tuberculous pleurisy	0		
23	Pc. fluid	Hyperpietic heart failure	0		
24	Vaccinia	Suspension from lapine	0		

+ = Agglutination occurred.
0 = No agglutination with known positive sera.
Dots under agglutination = no test made
Positive with one rheumatic fever serum but negative with another known positive serum
Pc. = pericardial RF = rheumatic fever RA = rheumatoid arthritis

Almost all sera were filtered before use Some substance possibly lipoid was encountered in the great majority of sera from rheumatism which gave rise to floccules in the hanging-drop preparations and either masked or confused the reading of *agglutination* Sera were filtered through small size L₃ Chamberland candles both having previously been chilled in ice This procedure proved effective stream 25 to 30 c cm of blood was taken into citrate, and after removing the cells the plasma was treated exactly as exudates Slight deposits were obtained, suspended, and examined

(*d*) *Subcutaneous Nodules*—These were removed as early after appearance as possible and, after macerating, were ground with sand, diluted with suspending fluid, and cleared of coarse material at 3000 to 4000 rev per min. The supernatant fluid was then treated in the same way as other materials

(*e*) *Cerebro spinal Fluid*—Cases showing evidence of widespread rheumatic infection were selected and the fluid examined in the usual way for virus bodies About half the total number of fluids examined were obtained post mortem and yielded deposits, the amount of which have a direct relationship to the amount of cellular matter present, thereby giving an impression, which was confirmed on examination, that these consisted of very small cell particles

(*f*) *Fibrin*—The fibrinous exudate in fatal cases of typical " bread and butter " pericarditis was examined in two instances After either preliminary grinding with sand or expressing in a tissue press, the exudate was diluted and centrifugalised Deposits were obtained after prolonged differential centrifugation which resembled those obtained from ordinary exudates This was not surprising, since the loose, fibrinous network contained an appreciable amount of fluid exudate Owing to the fact that this form of pericarditis is found only in very acute cases it should have present large amounts of the infective agent

(*g*) *Ascitic Fluid*—This was examined in only one case in which ascites and general œdema were present It is doubtful whether virus bodies were present, since high speed centrifugation of 250 c cm yielded only a scanty deposit which agglutinated spontaneously

(*h*) *Urine*—Increased permeability of the kidney, as evidenced by a high Addis count, occurs frequently in active acute rheumatic fever If it is assumed that at this stage virus bodies may be in the general circulation they might also appear in the urine

Two cases were selected In the first the Addis (1925) count was as follows casts, 3000 , W B C and epithelial cells, 36 million , R.B C , 4 million , protein, 30 mg The second showed the following count casts, 35,000 , W B C , 11 700,000 , R B C , 8,800,000 , protein, 30 mg , urea clearance, 91 per cent Both cases were in a highly active stage as evidenced by acute carditis, active arthritis, and nodule formation

After removing cellular matter, the urine was centrifugalised at 14,000 rev per min In both instances a very minute deposit was obtained and suspended

II—RHEUMATOID ARTHRITIS

(*a*) *Joint Fluid*—When possible early acute cases were selected in which joint fluid was in excess, with marked pain and swelling, but before secondary joint changes had occurred Some degree of elevation of temperature was generally present and the erythrocyte sedimentation rate increased This type of case appeared more likely to show the presence of the infective agent than the more chronic types in which secondary tissue changes have supervened When the disease was well established with hypertrophy of the synovial membrane and fibrinoid degeneration fluid was obtained at arthrotomy The subsequent examination of these fluids did not vary from that of joint fluids from rheumatic fever

(*b*) *Synovial Membrane*—Hypertrophied membrane was removed by synovectomy in the course of operative treatment of suitable cases (Timbrell Fisher 1937) After mincing, grinding with sand, and suitable dilution, coarse particles were removed in the centrifuge at 3000 to 4000 rev per min and the supernatant fluid spun at 14,000 rev per min The deposit was thoroughly washed After differential centrifugation a uniform suspension was obtained In a number of cases the supernatant fluid was filtered through a Berkefeld " V " candle before high speed centrifugation and in most instances the minced membrane was frozen and thawed six times before grinding

As was expected, copious deposits were thrown down by high-speed centrifugation, and from these, uniformly dispersed suspensions of particulate matter could be readily prepared.

III—CHOREA

Cerebro spinal fluids from typical cases of chorea were examined for the presence of bodies similar to those found in rheumatic material In only one instance could these be demonstrated and a suspension procured The fluid was withdrawn post mortem from a child of eight years with a history of severe chorea for six months No history of rheumatic fever was present either in the patient or her family Severe carditis and subcutaneous nodules were present The fluid was bacteriologically sterile

IV—EXAMINATION OF CONTROL MATERIAL

Pericardial and pleural fluids were obtained from cases of tuberculosis, carcinoma, cardiac failure without rheumatic history, and infections of known bacterial ætiology Joint fluids were procured from simple traumatic injury such as torn semilunar cartilage and from such non-rheumatic conditions as tuberculosis and osteomyelitis Synovial membrane was obtained from knee joints with torn semilunar cartilages These were treated in precisely the same way as material from rheumatism

When such specimens were from infective sources suspensions of numberless small particles could be prepared This was not surprising since such fluids must contain large quantities of cell granules and other products of cellular disintegration Normal synovial membrane, when minced and ground, also yielded suspensions of similar particles But simple transudates into the pleural or pericardial cavities yielded on high speed centrifugation at best only scanty deposits not comparable in amount with those from pathological exudates No deposits were obtained from normal joint fluids

Examination of Suspensions

MICROSCOPIC

Two methods were used—dark ground illumination and stained film preparations

When a drop of suspension from rheumatic material was examined by dark ground illumination and a magnification of 1000 diameters, numberless, evenly dispersed, very small particles were seen Some difference in size and refractility was observed but the majority of the particles were, as nearly as could be determined by this method of uniform size and conformed in every way to the description given of them by Schlesinger, Signy, and Amies The larger more opaque, bodies may represent some phase in the development of the virus if it is assumed that virus is present or they may merely be the product of cellular disintegration In favour of this latter view it may be significant that a preponderance of these larger forms was found in pathological exudates from non-rheumatic sources and in suspensions prepared from such tissue as synovial membrane

Films were stained by Löffler's flagellar method, the modified techniques of Zettnow and Caesares Gil and Morosow's modified Fontana Tribondeau silver impregna-tion method In these preparations particles of uniform size and staining could readily be identified When films from control suspensions were examined in conjunction with those from rheumatism it was evident that particles closely resembling known virus bodies could be demonstrated in all suspensions, whether these had been prepared from rheumatic exudates from joint fluids in rheumatic fever and rheumatoid arthritis from synovial membranes or from non rheumatic control material. In some instances it was not possible to distinguish rheumatic suspensions from non rheumatic. As a rule however a preponderance of bodies of uniform size and density was met with only in suspensions from rheumatic sources

It must therefore be realised that on morphological grounds alone these particles cannot be said to have any definite diagnostic significance in rheumatism unless considered in conjunction with serological tests

SEROLOGICAL INVESTIGATIONS

The microscopic agglutination test using hanging drop preparations in an aluminium ring moist chamber was employed

Mixtures consisting of equal volumes of suspension and dilutions of the sera to be tested were set up left at room temperature and examined at intervals of two to five days For this purpose transmitted light with a 16 mm objective and a ×10 ocular was used Each suspension was tested with sera from cases of the same type of rheumatism from which it had been obtained and with sera from other types. Controls of normal and non rheumatic sera were included and control suspensions were set up with normal sera and sera from the rheumatic group

A positive reaction was indicated by the presence of small irregularly shaped highly refractile floccules These commonly were present on the first or second day but occasionally did not appear until later The absence of agglutination was shown during the first forty-eight hours by a clear drop and later by the suspension settling out on the bottom of the drop in a thin plaque which presented an even ground-glass appearance This was invariable with controls and was used in addition, as an index of suitable density of the suspension

As an additional control agglutinated and unagglutinated suspensions were from time to time examined by dark ground illumination when the presence or absence of floccules was confirmed

SUSPENSIONS EMPLOYED

Table I contains a list of the suspensions from rheumatic fever rheumatoid arthritis chorea and from non rheumatic sources which were tested with appropriate sera These were chosen to cover as wide a range of material and rheumatic activity as possible The agglutination of these suspensions by sera from acute rheumatic fever rheumatoid arthritis and chorea is indicated The failure of these sera to agglutinate the control suspensions is also shown In many instances the amount of suspension obtained from joint fluids plasma and subcutaneous nodules was too small or of insufficient density to permit of their use as antigens

SERA

These were selected to include patients suffering from rheumatism of various types—acute rheumatic fever acute subacute and chronic rheumatoid arthritis chorea with and without carditis and an occasional case of Still's disease The rheumatic fever group included the disease in all stages although the majority were in the active stage with evidence of widespread infection such as carditis pericarditis and subcutaneous nodules pyrexia and increased erythrocyte sedimentation rate.

A control group of sera (see Table V) was studied at the same time This included cases of widely differing clinical diseases but excluding those with any history of rheumatism A number of sera were selected on the basis of high erythrocyte sedimentation rate although Schlesinger Signy and Amies had already pointed out that this feature alone was not correlated with positive agglutination of rheumatic suspensions In this group was included also sera with a very strongly positive Wassermann complement-fixation reaction and a number from pyrexial states of non rheumatic origin.

TABLE I

Suspensions tested for Agglutination

Number of suspension.	Material from which suspension was prepared.	Disease	Agglutination with serum from—		
			RF	RA	Uncomplicated chorea.
1	Pc. fluid.	Fatal RF	+	+	+
2		"	+	+	+
3	Fibrin from pericardium		+		
4	Pc. fluid		+		
5			+	.	
6	Fibrin from pericardium.		+		
7	Pc fluid	"	+		+
8			+	+	
9			+		
10	Joint fluid	RF	+		
11	Pleural fluid		+		+
12			+		
13			+		
14	Joint fluid	Early RA	+	+	
15				+	
16		Subacute RA	+	+	
17	Joint washings.	Chronic	0		
18	Synovial membrane.	Subacute		+	
19	Cerebro-spinal fluid	Chorea with carditis and nodules	+		+
20	Pc fluid	Terminal effusion intestinal hæmorrhage; cor bovinum	0		
21		Bacterial endocarditis.	0		
22	Pleural fluid	Tuberculous pleurisy	0		
23	Pc. fluid	Hyperpietic heart failure.	0		
24	Vaccinia	Suspension from lapine	0		

+ = Agglutination occurred

0 = No agglutination with known positive sera.

Dots under agglutination = no test made.

Positive with one rheumatic fever serum but negative with another known positive serum

Pc. = pericardial; RF = rheumatic fever RA. = rheumatoid arthritis

Almost all sera were filtered before use Some substance possibly lipoid was encountered in the great majority of sera from rheumatism which gave rise to floccules in the hanging-drop preparations and either masked or confused the reading of agglutination Sera were filtered through small size L_1 Chamberland candles both having previously been chilled in ice This procedure proved effective

TABLE III

Showing the agglutination titres obtained with rheumatic fever sera taken at various stages during the clinical course in individual cases and suspensions (susp) from rheumatic fever, rheumatoid arthritis, and chorea (C S F)

Case	Date of sample of serum	Condition of patient	Agglutination RF susp	Agglutination RA susp	Agglutination Chorea susp (C S F)
18	24/2/36	Acute pc very ill	1/32	1/16	
	3/3/36	Acute pleurisy very ill	0		
	12/3/36	Improving	0		
	19/3/36	"	0		
	31/3/36	No definite signs of activity	0		
	14/4/36	Inactive	0		
	30/4/36	"	1/16		
	21/5/36	"	0	0	0
8	13/3/36	Typical RF with carditis	0		
	24/3/36	B S R. 30/200	0		
	2/4/36	Settling down	0		
	16/4/36	Painless joint effusions W R +	0		
	28/4/36	No active rheumatism	1/8	1/8	
25	25/5/36	Fever pains, carditis, nodules B S R 35/200	1/32	1/32	
	9/6/36	" 30/200	0	0	
	1/7/36	" 30/200	0	0	
	27/7/36	" 25/200	0		
10	3/11/36	RF	0		
	23/11/36	Clinical details not available	1/16		
	5/12/36		1/4		
	17/12/36		1/4		
52	26/3/36	Cardiac cripple acute pc	0	0	
	2/4/36	Fever and pericarditis still	0		
	16/4/36	" "	0		
	28/4/36	No fever pericardial rub	1/16	1/16	
23	8/5/36	Polyarthritis and carditis	1/32	1/16	1/4
	29/5/36	No signs of activity	0	0	
	17/11/36	Nodules recurrence of carditis B S R 16/100	0		
20	15/10/36	Carditis, first attack B S R 15/200	1/16		
	23/11/36	B S R 4/200	1/8		
	19/12/36	Inactive	1/16		
36	1/5/36	Carditis and nodules following sore-throat	1/8	0	1/16
	16/6/36	Nodules still present	0	0	
	1/7/36	" "	0		
10	27/4/36	Carditis, first attack B S R 20/200	1/16	1/8	
	8/5/36	Recovering B S R 15/200	1/8	1/4	1/4
	16/6/36	Well B S R 8/200	1/8	0	
62	27/4/36	Pains and carditis first attack B S R 40/200	1/16	1/8	
	8/5/36	Improving B S R 30/200	1/4	1/4	1/4
	9/6/36	Improving B.S R 12/200	0	0	
42	8/5/36	Recurrence of carditis and chorea	1/8		
	9/6/36	About the same	0		
	9/7/36	Improving	1/4		
34	16/11/36	Soon after recurrence B S R 5/200	1/8		
	30/11/36	B S R 25/200	1/16		
78	6/10/36	Uncomplicated chorea	1/16		
	23/11/36	Improved	1/4		
17	16/11/36	Recurrence of carditis B S R 42/200	1/8		
	30/11/36	Improving B S R. 30/200	1/16		
49	25/5/36	Fever pains and carditis (recurrence) B.S R 20/200	0	0	
	1/7/36		0	0	
7	16/12/35	Recurrence of arthritis carditis and nodules	0		
	21/9/36	Convalescent nodules still present	1/32	1/32	
9	24/3/36	Recent pericarditis	1/8		
	1/4/36	B S R 48/200	1/16	0	
1	29/4/36	First attack of arthritis B.S.R 78/200	1/16		
	16/6/36	Well B.S R 6/200	1/8		
14	20/6/36	Recurrence of carditis	0		
	1/7/36	Improved B S R 10/200	0		

TABLE III—*continued*

Case	Date of sample of serum	Condition of patient	Agglutination RF susp	Agglutination RA susp	Agglutination Chorea susp (C S F)
27	21/5/36	First attack of carditis and chorea	0		
	16/6/36	No signs of activity	0	0	
30	16/11/36	First attack of carditis and nodules , B.S R 25/100	1/8		
	8/12/36	No sign of activity, except B S R 12/100	1/16		
31	15/2/37	Recurrence of carditis and nodules B S R 32/100	1/4		
	18/5/37	In statu quo B.S R 33/100	0		
32	15/12/36	Recurrence of carditis B S R 45/100	1/16		
	2/2/37	Improving B.S R 24/100	1/8	1/8	
40	1/7/36	First attack of pains carditis and nodules B S R 40/200	1/4		
	27/7/36	Improving B.S R 25/200	0		
50	16/11/36	Recurrence of carditis B.S R 26/200	1/8		
	30/11/36	Improving B.S R 10/200	0		
58	15/12/36	First attack with fever carditis and nodules B S R 20/100	1/16		
	2/2/37	Slightly improved no fever	0	0	
4	14/5/36	First attack, fever and polyarthritis	0		
	28/5/36	Well	0		

pc. = pericarditis
- no test made

although it was realised that some loss in titre probably took place Withdrawal of blood during a fasting period was of little value in eliminating the lipoid like substance, nor was high-speed centrifugation of the sera effective

Cross-agglutination Tests

A certain proportion of acute rheumatic fever sera were put up with suspensions from rheumatoid arthritis and in a few instances with a suspension from cerebro spinal fluid from acute chorea Sera from acute chorea and rheumatoid arthritis were also set up with suspensions from acute chorea rheumatoid arthritis, and acute rheumatic fever By this means the presence of an antigenic factor common to the group of rheumatic diseases was examined

It was realised early in the investigation that the most hopeful source of virus bodies in rheumatoid arthritis was joint fluid from acute cases Such occur infrequently in hospital practice, and consequently the supply of suspension from this source was limited, and only a relatively small series of cases was available for test Since only one suspension was obtained from chorea the number of tests in which it was employed was also limited

Rheumatoid arthritis is a slowly progressive disease It was, therefore, difficult to select periods in the clinical course when an immunity reaction was likely to be elicited For this reason, it was considered that evidence of inter relationship between acute rheumatic fever and rheumatoid arthritis would more readily be obtained if rheumatic sera were set up with rheumatoid arthritis suspension The series examined on this basis contains a relatively large number of sera

RESULT OF AGGLUTINATION TESTS

In Table II are shown the agglutination titres obtained, using sera from cases of acute rheumatic fever and chorea with suspensions from rheumatic fever rheumatoid arthritis and chorea (C S F)

Table III shows the agglutination titres obtained with rheumatic fever sera taken at various stages during the clinical course in individual cases and suspensions from rheumatic fever rheumatoid arthritis and chorea (C.S.F)

In Table IV are set out the agglutination titres with rheumatoid arthritis sera and suspensions from rheumatoid arthritis and rheumatic fever

TABLE IV

Showing the agglutination titres obtained with rheumatoid arthritis sera and suspensions from rheumatoid arthritis and rheumatic fever

No. of serum	Age of patient (years).	Length of history	Arthritis.	Pyrexia	Blood sedimentation	Clinical notes.	Suspension	
							RA	RF
138	7	1 mth	+	+		RF and chorea recently		1/4
139	21	3 mths	+	+		RF in childhood	1/8	0
140	21	3½	+	+		Same case	0	0
141	61	6	+	0	28/100		1/16	0
14	50	1 yr	+	0	72/100			0
143	2*	1½ yrs	+	0	19/100	Early spondylitis mitral stenosis	0	0
144	3	1½	+	0			0	1/4
145	25	3	+	0	24/100		0	
146	60	6	+	0	13/100		0	0
147	36	5	+	0	60/100		0	
148	39	5	+	0	51/100	*B coli* bacilluria.	0	
149	60	5	+	+				0
150	49	7	+	0	Norm.	? Gout. Blood uric acid 2·4 mg per 100 c.cm	0	0
151	Adult	7	+	+	72/100	Iritis		0
15	58	10	+	0				1/4
153	42	11	+		29/100		0†	0
154	30	15	+	0	31/100	Mitral stenosis.	0	1/4
155	40	20	+				0	0
156	Adult		+				0	0
157	60	Many yrs	+	0	61/100		1/16	1/16
158			+				1/4	1/16
159	Young adult		+			Recovering	0	0
160			+				1/8	1/4
161			+				0	
162			+				1/4	
163			+				0	0

No agglutination with suspension No 15 (see Table I)
† Agglutination 1 in 8 with suspension No 15
Norm = normal

In each case studied the important clinical data at the time when the serum was taken are given in order to indicate any bearing of the clinical stage of the disease on the agglutination reaction This aspect is stressed in Table III where serum was examined from individual cases at intervals during the clinical course of acute rheumatic fever

Discussion

Suspensions of particles bearing a close resemblance to elementary bodies of known virus infections have been prepared from a variety of materials from cases of acute rheumatic fever rheumatoid arthritis and chorea Comparison of the morphological characteristics of these suspensions with others prepared by similar technical procedure from sources unrelated to rheumatism call for some discussion It has already been pointed out that these non rheumatic suspensions bear a close resemblance to those obtained from true rheumatic sources and to undisputed virus elementary bodies of comparable size Suspensions prepared from tissues and from any infective pathological exudate show large numbers of these particles which are indistinguishable on morphological grounds from known virus bodies, but contain in addition large numbers of particles of varying sizes and degrees of density Pericardial pleural and joint exudates contain the particles of uniform size and density to a much greater degree than other materials from acute rheumatism and rheumatoid arthritis or from non rheumatic materials

Since these particles are not confined to rheumatic infection *agglutination tests* have been used to test for their relation to rheumatism From Table I it appears that the suspensions obtained from pleural, pericardial and joint exudates are specifically agglutinated thus lending support to the observation that the preponderance of particles of regular size and density observed in these may be true virus bodies Suspensions from such sources as blood urine cerebro spinal fluid subcutaneous nodules and ascitic fluid contained relatively few of these particles and were not suitable for agglutination tests In only one instance was a suspension from synovial membrane from rheumatoid arthritis specifically agglutinated This is not surprising since the period between primary infection of the joint and removal of the membrane makes it exceedingly unlikely that large quantities of the infecting agent would still be present Fibrin from acute pericarditis on the other hand yielded suspensions that were specifically agglutinated probably by reason of the exudate present *The control suspensions (see Table I), which were selected to cover a wide range were in no case agglutinated by any of the known positive sera*

When the agglutination results from Tables I II III and IV are studied it is clear that not only are suitable suspensions from acute rheumatic fever rheumatoid arthritis and chorea (C.S F) agglutinated by the sera of patients suffering from the particular disease from which the suspension was prepared, but also that considerable cross-agglutination appears within the group of rheumatic diseases From these results it would seem that these diseases are closely related While it cannot be said that their ætiology is identical it is at least probable that they possess some common significant factor which is reflected in serological tests.

The conception of rheumatic fever and rheumatoid arthritis as closely related diseases is supported by other investigators Dawson and Tyson (193 support the hypothesis that the two diseases a intimately related, and possibly different man festations of the same fundamental patholo process, on the evidence of familial relatio geographic distribution, initiating factors, se incidence age incidence and clinical manif in different age-periods pathological similari subcutaneous nodules and streptococcal logical findings Timbrell Fisher (1937) the pathological histology of the synovi uncomplicated forms of the arthritis of so-called unknown rheumatism presented a similar and specific picture From the type of reaction presented a virus ætiology either alone or in conjunction with some other factor was suggested

Collins (1937), however, in a histological study of the subcutaneous nodules in both these diseases concluded that there was insufficient evidence of resemblance to postulate either a close pathological relationship or a common ætiology of these structures

It may be argued that the common factor need not be of ætiological significance but may be some non specific cause such as pyrexia or increased erythrocyte sedimentation-rate The series of cases examined is sufficiently comprehensive to show that the agglutination titre does not run parallel with either of these factors Schlesinger, Signy, and Amies observed the fact that increased erythrocyte sedimentation is not responsible for the agglutination In our series, also, sera from non-rheumatic sources, selected on account of their high sedimentation index, gave completely negative results Until these suspensions are proven to be infective the possible nature of the reaction must be considered particularly in the light of certain serological observations made in other diseases

Tillet and Francis (1930), for example, showed that a substance, fraction C, probably a non nitrogenous sugar, which they isolated from pneumococci and which was chemically distinct from the specific capsular carbohydrate and the somatic nucleoprotein, was precipitated by pneumonia sera in the acute stage of the disease, by the sera of acute rheumatic fever in the active stage with pyrexia, and by sera from acute streptococcal and staphylococcal infections The course of the temperature and the capacity of the sera to precipitate fraction C ran closely parallel so that in convalescence the reaction was no longer present Other sera having no relation to pneumococci, streptococci, staphylococci, or acute rheumatic fever were negative, although the temperature was elevated in all cases Schlesinger, Signy, and Amies considered the possibility of a relationship between the agglutination and streptococcal infections, but were unable to find evidence in its favour, except in one doubtful case with a slightly raised temperature In our own test and control sera no evidence was found that elevated temperature had any influence on the agglutination reaction In view of a virus hypothesis for rheumatism the possibility of a reaction between the patient's own serum and exudates was considered, particularly in the light of the observations of Hughes (1933) in yellow fever Here it was found that a precipitation occurred when the serum of a monkey recently recovered from severe yellow fever was put up with its own serum taken during the period of acute illness This precipitinogen was not the virus of yellow fever as shown by infectivity tests but appeared to be associated with a protein of the albumin fraction Its concentration reflected the severity of the illness, since it disappeared with recovery The resulting precipitin, which also occurred in the serum of human patients recently recovered from a severe yellow fever infection, was entirely independent of protective antibody resulting from an infection With this in mind, dilutions of serum from a patient gravely ill with rheumatic fever in the acute stage were set up in hanging drops with his own pleural exudate after it had been centrifugalised for 1 hour at 14 000 rev per min As a result of this centrifugalisation a suspension of typical rheumatic bodies had been obtained which was specifically agglutinated by the patient's own serum as well as by other acute rheumatic sera which showed at the same time definite agglutination with other acute rheumatic suspensions The hanging drop preparations of serum dilutions and supernatant of the pleural exudate remained perfectly clear when examined microscopically over five successive days No trace of precipitation was found with other known positive sera and this pleural exudate It is significant to record, also, that a suspension of washed vaccinia elementary bodies remained unaffected after standing overnight in a pericardial exudate from rheumatic pericarditis, which had been spun for 1 hour at 14,000 rev per min, and resuspended These bodies, both before and after remaining in contact with pericardial exudate, gave completely negative results with known positive acute rheumatic fever sera

The cases of rheumatic disease investigated were chosen to include the three well known members of the group—rheumatic fever, rheumatoid arthritis, and chorea, with particular reference to agglutination and the bearing which the clinical findings in each case had upon it For full details Tables II, III, and IV should be studied The results may conveniently be summarised in the following Table (V),

TABLE V

Summary of Agglutination Tests from Tables II and IV

Type of case from which serum was obtained	Reference		Cases.	Agglutination of suspensions from—					
	Table	Group		RF		RA		Chorea (C S F)	
				+	0	+	0	+	0
Active RF, without carditis or chorea	II	1	4	2	2	1	3		
Active RF with carditis	II	2	67	31	36	12	7	5	2
a With subcutaneous nodules	II	2	21	13	8	5	3	2	
a Without subcutaneous nodules	II	2	44	17	27	7	5	3	2
b First attack	II	2	28	17	11	8	1	3	
b Recurrence	II	2	36	13	23	4	6	2	2
c Recent throat infection	II	2	17	10	7	3	2	2	
c No known recent throat infection	II	2	46	20	26	0	6	3	2
Inactive RF	II	4	9	4	5	2	4	2	3
Chorea alone	II	3	8	5	3	1	1	1	
RA	IV		26	7	14	6	15		
Control sera (see p 423)			21	0	21	0	1	0	1

where an analysis of the number of sera in each group and the ratio of positive to negative agglutination and the extent of cross agglutination is available The rheumatic fever group is divided into the main clinical subdivisions and the outstanding clinical data for each are indicated along with their effect on agglutination

The low titres obtained even with the best positive cases may attract notice, but it has to be borne in mind that in most virus diseases so far studied by the serological methods employed in this work, antibody titres never reach the high levels characteristic of bacterial infections in which the antigen employed is derived from the cultivated organism

Summary

The main findings of interest may be summarised briefly Sera from patients suffering from rheumatic fever chorea and rheumatoid arthritis agglutinate suspensions from the corresponding disease Cross agglutination occurs within the whole group with sufficient regularity to point to an inter relationship and to hypothecate for rheumatoid arthritis and chorea a possible virus ætiology similar to that of rheumatic fever

Agglutination of rheumatic fever suspensions by rheumatic fever sera occurs in various types of the disease in the active stage and also when it has become inactive Stated in general terms the number of sera giving positive agglutination is about equal to those showing no agglutination It is difficult to assess the relationship of carditis to the agglutination tests since it is an almost constant manifestation of active rheumatic fever of the acute type but it is evident that activity of the infection alone does not govern agglutination

The presence of subcutaneous nodules which is regarded as an evidence of widespread infection as well as activity does not run parallel to agglutination but it is perhaps suggestive that in these cases a considerably larger proportion of sera failed to agglutinate the rheumatic suspensions when nodules were absent than when they were present A suggestively higher proportion of positive agglutinations occurred with sera of cases suffering a first attack when compared with those in which the disease showed recurrence This finding may have some significance in the occurrence of remissions

When the serum of individual cases of rheumatic fever was tested for agglutination with agglutinable rheumatic fever suspensions at intervals throughout several weeks and in some instances several months it was not possible to correlate the presence or absence of agglutination with any definite phase in the clinical condition It was realised however that before real significance could be attached to correlative investigations of this kind individual cases must be studied over longer periods than has been possible in this investigation

Until further evidence of the nature of the agglutination reaction in rheumatism is obtained or the infectivity of the particulate bodies proven it should be assumed that it is specific for the rheumatic group and in the absence of definite proof of a bacterial ætiology as evidence of possible virus infection.

We wish to thank the medical staffs of many hospitals for placing their cases and clinical material at our disposal throughout this investigation Our thanks are also due to Mr W T Russell of the department of epidemiology and vital statistics, London School of Hygiene and Tropical Medicine for statistical advice

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HYPOSPADIAS

ITS EFFECTS, SYMPTOMS AND TREATMENT

A REVIEW OF 101 CASES

BY A. RALPH THOMPSON Ch M Vict F R C S Eng
CONSULTING UROLOGIST TO GUY'S HOSPITAL

THE urethral passage normally opens at the tip of the glans penis or rather just below it but in the condition known as hypospadias the opening falls short of the tip of the glans and lies upon the under surface of the penis or even further back. The complete development of the whole passage of the urethra is made up of two main portions—the part that is formed from the bladder end comprising the major part of the normal urethra which *has the controlling mechanism of micturition complete* and the part that may be termed the fovea glandis which is a pit on the tip of the glans of varying but not considerable depth By the *meeting of the two parts* the *fully* formed urethra is completed. In certain cases of hypospadias the opening of the posterior part of the urethra may be far away from the glans but in others it may be quite close to the glans and even upon it though the two portions of the urethra do not become one as in the normal condition. More than this, the opening of the posterior part of the urethra may lie actually within the fovea glandis this may be named concealed hypospadias.

The normal meatus urinarius is rather a complicated structure It is a vertical slit and since the passage of the urethra is a horizontal slit a rifling action upon the flow of urine is produced which aids in the act of micturition. This is well known but it may not be so well known that two distinct vertical plaques lie one on each side of the normal meatus, somewhat like the appearance of stomata upon a leaf. They doubtless assist in closing the urethra after micturition and thus prevent an undue formation of drops at the meatus after the act In any operation for the plastic cure of hypospadias if this fovea glandis is present it should be preserved and used for the meatus, if this is possible On the other hand the opening of the hypospadias may be small and its edges bloodless and thin, in fact almost membranaceous its appearance is then very different from that of a normal meatus

CLASSIFICATION

The types of hypospadias in this series of cases may be classified as usual according to the position of the opening They may be summarised as shown in Fig 1

Concealed —The abnormal opening of the urethra is situated actually in the meatus itself This has to be opened up in order to reveal the abnormal opening when it is found that the true opening of the urethra is small inelastic and ventral in position In order to reveal it the meatus must be opened and examined This condition occurred in 12 per cent of the total

Glandular —Situated upon the glans but behind it though only separated by a short distance (21 5 per cent)

Coronal.—At the level of the corona glandis; what remains of the frænum may be perforated by the *opening* (12 per cent)

Post-coronal.—Just behind the corona (20 per cent)

Corporeal —Lying somewhere upon the body of the penis in front of the scrotum (3 per cent)

Peno-scrotal —At the junction of the penis and the front part of the scrotum and is rare (1 5 per cent)

Scrotal —The opening appears in the scrotum itself and the condition is rare (3 per cent)

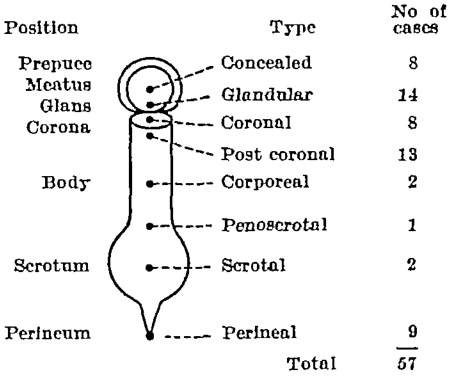
Perineal.—In this condition the opening is situated in the perineum behind the scrotum, or rather the position of the scrotum, which is in two parts either completely, or in a portion of it (13.5 per cent.)

Multiple small openings occurred in 12 per cent. of the total. In no case was the opening at all large, but sometimes it did cause some difficulty in controlling the direction of the stream, and in one case gave rise to a double stream. The accessory opening was affected with gonorrhœa in one case. Once the opening was narrow, and in another case it was quite large and made a wide communication with the second passage.

A very common feature of hypospadias is the well known and generally recognised hooded prepuce, but there is another that may not be so generally known. There is often a band that unites the edges of the hooded prepuce, such as one that might tie and fix an academic hood. This appears to cause obstruction to the flow of blood, and the prepuce may be not only redundant but œdematous. The treatment necessary for the first four minor varieties that occur in or near the glans penis is very different from that for the major degrees, but before a description is given of the treatment, the disadvantages of the condition may be stated briefly.

FIG. 1

Types of Hypospadias



DISADVANTAGES OF HYPOSPADIAS

Æsthetic.—The hooded prepuce is quite obvious in all the varieties and especially if it is œdematous.

Deformity.—The curvature of the penis may be very pronounced under normal circumstances, but when erection takes place then the curvature becomes more pronounced, and may prevent the penis from entering the vagina.

The *flow of urine* may be altered from a forward to a downward direction. The clothes are constantly wet not only because of the position of the hole of the urethra but because of the absence of the delicate mechanism for closing the normal meatus. Here it is pertinent to point out the disadvantages of these two latter conditions. Curvature may prevent coitus, the altered direction of the stream of urine leading possibly to a misdirected flow of semen. Thus not only the penis but the semen may fail to enter the vagina. I saw in my practice a girl who had apparently no vagina, but when a dissection was made it was found that the usual opening of the urethra was covered with a strong membrane, which was open only anteriorly and through this micturition was possible. At the same time in Guy's Hospital there was a woman in whom an open operation was necessary in order to allow the birth of a child, and no vagina could be discovered. It seems that it may have been a similar type of case to that of the girl, but it shows that neither entry of the penis nor the immediate introduction of semen is essential for conception. These facts, of course, are well known. There was one case at least of hypospadias in my series in which the father had several children by his wife though the stream of urine was directed downwards. It will be shown later that even the major varieties may not affect sexual relations.

Size of opening.—The smallness of this may be serious. The opening may be only a pinpoint, and in young subjects it may lead to dysuria with great pain during the flow, and even retention of urine. By becoming septic it may give rise to cystitis and orchitis, and in one case there was reason to suspect renal trouble, which may have been septic. In one case a man had passed a stone along the urethra, where it had been arrested in its progress. The surgeon who saw the man at the first had, I think unwisely, removed the stone through an incision over it—i.e., in the urethra—and appeared to have neglected the possibility of a small opening even in a minor degree of hypospadias. Be this as it may, the wound did not heal, and the patient had a urethral fistula for thirteen years. In another case the obstruction and possibility of an ascending infection may have been responsible for the formation of a stone in the bladder.

Prolongation of an attack of gonorrhœa.—It is well known that this predisposes to a stricture, and in three cases at least there was a stricture in the usual position in the urethra, in addition to the small opening of the meatus.

Retention of urine.—A small meatus has been shown to lead to this in young people, but also it may turn the scale in favour of a retention in cases of older people suffering from stricture or enlarged prostate.

Proneness to sepsis is a very real danger as has been shown previously. In connexion with this and the last disability the following case may be quoted.

An elderly man had retention due in the main to an enlarged prostate. I was summoned because there was much difficulty in passing a catheter. The patient showed a fovea glandis that was normal in size and appearance, but he had a hooded prepuce, and a small opening of a hypospadias which lay near the corona glandis. The passage of a catheter through this opening was comparatively easy, and the retention was relieved. An operation for prostatectomy was performed by another surgeon. The wound was long in healing, and I often wonder if sufficient allowance was made for the small opening of the meatus.

Difficulty in "sexing" occurs in the perineal varieties, which has also other great disadvantages. The wetting of the clothes is inevitable unless the patient micturates as a woman does. Also there may be difficulty in coitus, though this is not always so. Thus a man consulted me for syphilis which he had contracted in the usual way in West Africa. He married after a successful operation for the condition of perineal hypospadias. The difficulty of deciding to what sex the patient belongs is greater at birth than later in life. A small penis is very like a large clitoris, the opening of the urethra may be so large as to suggest a vagina, and the scrotum being in two halves may simulate the labia majora. There was no incontinence, however, save in one case and even then it was very doubtful, and may have been of the enuresis type. If there be any doubt about the sex the child should be examined under an anæsthetic, which will reveal the absence of the uterus The testes are not necessarily absent or undescended and an anæsthetic will assist in their palpation even when they are situated in the abdomen Usually there should be no reasonable doubt about the sex though at birth there may be necessity for caution in the expression of any views and this may be very properly delayed.

For what do patients seek advice who are suffering from hypospadias mild or grave? The following are the main reasons The friends noticed something wrong The child had pain dysuria, or even retention The condition was quite obviously wrong or the patient had been rejected for the public services Often however the patient was not aware that there was anything the matter with him and sought advice for something else such as a stricture or an enlargement of the prostate or he noticed that there was difficulty in intercourse Patients may be of all ages when the condition is discovered

TREATMENT

In my hands plastic operations designed for the relief of the minor degrees have not led to the success anticipated from the good results experienced in similar operations for the major varieties Short of a plastic operation if there are difficulties in micturition—namely pain dysuria and retention—the small opening should be gently dilated but by no manner of means should it be split. The surrounding parts are so thin and membranaceous that after being cut they do not heal well and the patient thus may be rendered worse. Gentle dilatation of the opening with an olive headed or metal instrument, even when only done once may affect a permanent cure This was done on a boy aged 12 with excellent results The treatment may require one or two sittings but all the cases that have been treated in this way have done well. Another method of dilatation that has *been adopted is that by means of a laminaria tent The patient is instructed* to pass urine some time after drinking water A laminaria tent is then introduced into the opening and if needed an anæsthetic may be given for this introduction. The *tent is allowed to remain* in position for nine hours and after its removal the opening is as a rule widely dilated without pain There is no reason against the introduction of a second tent and similar precautions are taken with this This treatment is not advocated for children but for young men it is excellent While dilatation is proceeding no visitors should be allowed and the patient should be kept quiet

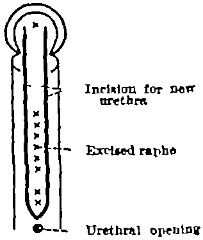


FIG 2.—Diagram showing position of incisions for excising raphe and for forming new urethra

In one case a very neat little operation was done for the making of the flow of urine more normal.

The patient had been rejected for the army and desired an operation. A circular incision was made about 1/16th in. from the edge of the meatus which was situated near the fovea glandis A second almost concentric incision was made external to this and thus a circular strip of tissue between the two incisions could be removed This was done and care was taken that the area was wider above than it was below The edges were then united together By this means the meatus opened more forward than before the operation and the result was that the flow of urine was directed forwards and with a greater force

For the graver varieties a bigger operation is needed and I have been bold enough and *obstinate enough to do a similar operation through* the past twenty four years on all the patients. It must be confessed that the results, as a rule were excellent and most gratifying This operation was based on two cases that were recorded in 1920 (*Lancet* 1920 2 700) Since then I have adopted the same methods subject of course to slight alterations to meet particular emergencies

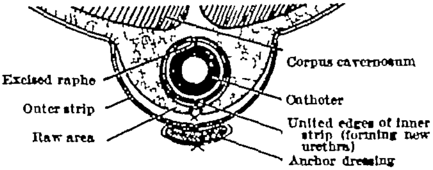


FIG 3.—Cross-section of penis showing method of forming a new urethra over the catheter

Before an operation upon adults is carried out the patient should be given potassium bromide gr 5 every *four hours and a light diet* The parts being previously and carefully rendered aseptic, an anæsthetic is administered and the patient is placed in the lithotomy position with a fair-sized block covered with a clean towel under the buttocks The dorsum of the prepuce is secured in a Lane's forceps and put on the stretch. This stretching must be allowed for during the operation The central raphé of the penis is then deliberately excised for I find that there is scar tissue in this region, and this is responsible for the deformity of the penis during erection—in some cases even without erection. A linear strip about ¼ in wide is excised from the penis, or the glans if there is a good fovea to a level just in front of the opening of the hypospadias The strip of skin is then excised and the edges are sutured with fine catgut The sutures should not be spared A No 5 English gauge or smaller catheter is introduced into the bladder and secured in position It must not be so large as to produce tension Incisions ¼ in apart are then carried from the glans to beyond the opening of the hypospadias on each side (Fig 2) The meatus if necessary should have been dilated beforehand, but no incision should be so planned as to interfere with it; this is a very important point The medial edges of each incision are then united with fine catgut over the catheter care being taken that the deep part of each suture is superficial to the catheter It may happen that a part of the edge in front is at right angles to the main part if so any stitch that is inserted must also be at right angles to the general line of the sutures. Anyone who has experience of sewing a kidney knows how important it is that all sutures should be at right angles to the edges of the renal wound and the same rule applies in these cases In order to maintain tension at a minimum over the catheter the inner edges may be undermined deeply but not extensively Thus a cutaneous tube is formed over the catheter on both sides of which is a raw area bounded by the outer edges which are then similarly undermined These raw areas are united with each other by a series of fine catgut sutures inserted Lembert wise which should not be spared for they are very important The outer edges are then united with salmon gut but after they have been tied they are not cut until a piece of gauze has been inserted over the first knots (Fig 3) The long ends of each sutures are then tied over the gauze and thus an anchor dressing is applied. The sutures are then cut short care being taken that they do not prick the patient There should be no tension on any suture The catheter is left in position, and the patient is taken back to bed

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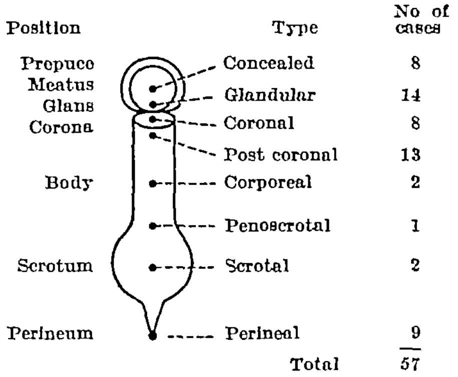

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That this reasoning holds for the sulphæmoglobinæmia which follows sulphanilamide treatment is shown by the following experiments

1 *Catalysis by sulphanilamide of the reaction between hydrogen sulphide and hæmoglobin* —This has been demonstrated by mixing the reactants diluted with a phosphate buffer solution diluted in one case with water in the other with a saturated solution of sulphanilamide Thus 8 c cm of a 0·078 per cent solution of potassium dihydrogen phosphate and 2 c cm of a 11 876 per cent solution of disodium hydrogen phosphate in water were diluted to 100 c cm. with water A second solution was made by diluting the same phosphate mixture to 100 c cm. with a saturated solution of sulphanilamide The sulphanilamide buffer solution was allowed to settle till clear and the supernatant fluid used No difference in *p*H could be detected between the tubes (*p*H 6 8)

In a 6 in by 1 in test-tube were placed 20 c.cm buffer solution 0·5 c cm of laked blood and 0·5 c cm of a very dilute solution of ammonium sulphide in a similar tube were placed equal volumes of sulphanilamide buffer blood and ammonium sulphide The two tubes were examined spectroscopically both along the long axis (2 in. column of fluid) and transversely (1 in. column) and the time which elapsed before the α band of sulphæmoglobin could be seen was recorded.

In one experiment it was found that in the control tube the band could be just seen after 10 minutes when looking down the long axis of the tube and was definite only after 20 minutes; viewed transversely the corresponding times were 29 and 55 minutes When sulphanilamide was present these times were reduced to 3½ 7 11 and 21 minutes respectively

The results of the first experiments confirm the hypothesis of Snapper and van den Bergh, and are not in agreement with a recent publication on the subject To demonstrate the catalysis it is necessary to use much higher concentrations of catalyst than are possible in vivo and to use only traces of sulphide to keep the reaction from too rapid completion

2 *Production of sulphæmoglobinæmia in a volunteer* —The subject one of us (G D) was given the drugs investigated for periods of three days, and intervals of a week or more were allowed to elapse between tests He was given first 3 grammes sulphanilamide daily then 12 grains of calx sulphurata daily and then both together with no unusual effects Later he was given 3 g sulphur daily for three days and no sulphæmoglobinæmia could be detected; but when he took 2 g sulphanilamide and 1 2 g sulphur during one day sulphæmoglobin could be detected in his blood the following morning

It is highly probable that all drugs containing the group $C_6H_4N<$ are capable of causing methæmoglobinæmia and of facilitating the production of sulphæmoglobin If any new drug containing this group is administered in large doses such complications should be anticipated In some cases the catalytic action on the hæmoglobin-sulphide reaction may be demonstrated in vitro in other cases this may prove difficult or impossible—for example when the drug is almost insoluble in water For such insoluble drugs trial on suitable animals will be necessary

ACTION OF MAGNESIUM SULPHATE

The action of magnesium sulphate in accelerating the production of sulphæmoglobinæmia is less easy to understand Dr George Graham has pointed out to us that this substance appears to increase the production of hydrogen sulphide in the gut so far as may be judged by observation excessive quantities of hydrogen sulphide may be produced by other purges but the effect is more marked and constant with saline purges than with others

For this reason and because of the great absorption of energy required to effect the reduction of sulphates to sulphides we think it improbable that the hydrogen sulphide formed after administration of sulphates is derived by reduction of the sulphate. An alternative explanation is possible and in our opinion more probable In the gut magnesium sulphate is dissociated into magnesium and sulphate ions the magnesium usually forms some insoluble compound while the sulphate ion remains in solution and only traces are absorbed The presence of this unabsorbed dissolved material increases the osmotic pressure of the gut contents so that water will pass from the body fluids into the lumen of the gut (cf. Witts 1937) Absorption of fluid from the colon will be correspondingly reduced, and the more liquid contents of the colon will form an admirable medium for the growth of bacteria; further by the action of purges the absorption of food is decreased and more passes to the colon unabsorbed Since many bacteria normally present in the colon split cystine to form hydrogen sulphide an increased production of hydrogen sulphide may reasonably be expected.

Any treatment which helps the formation of a liquid stool may be expected to accelerate the formation of sulphæmoglobinæmia. Liquid paraffin since it acts as a mechanical lubricant is the only laxative which can be relied on to prevent the formation of scybala without the risk of accelerating the appearance of sulphæmoglobinæmia. If liquid paraffin is insufficient or if constipation is severe it may be necessary to use enemata, the residues from which are rapidly absorbed leaving the gut clean and dry

TREATMENT TO PREVENT SULPHÆMOGLOBINÆMIA

We have therefore designed a régime for patients who are treated with sulphanilamide in the hope of preventing or at least delaying the onset of sulphæmoglobinæmia We consider this justifiable since it is impossible to decide before treatment is started how long it will be necessary to continue with this drug; while extreme degrees of sulphæmoglobinæmia *must* be avoided since they may lead to dyspnœa relieved only by blood transfusion.[1] Abstention from purges is not in our experience enough to prevent the development of sulphæmoglobinæmia

Our aim has been to maintain the colon as free as possible from food residues and from water so that bacterial decomposition should be reduced to a minimum To this end the patient is placed on a low residue diet of calorific value sufficient to provide for the increased metabolism due to the pyrexia only the minimum number of eggs (one or two daily) are given since these contain for the same weight of protein two or three times as much sulphur as other foods. Miss M Abrahams the hospital dietitian, has informed us that it is not difficult to produce a low residue diet containing as much as 3500 calories (typhoid-convalescent diet) since a 14 st. man 6 ft 1 in tall has a basal requirement of only 1980 calories daily this should suffice even if his average temperature rose to 104° (we have not used diets as large as this) Unless diarrhœa is present, 30–45 c cm liquid paraffin is given daily and all other aperients are forbidden If constipation develops enemata are given while if the patient has recently received magnesium sulphate the colon should be thoroughly washed out.

One further precaution is desirable Phenacetin is a most useful analgesic drug but is itself capable of facilitating the formation of sulph and methæmoglobin For this reason its use with patients who are

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[1] In contrast methæmoglobinæmia however intense (we have seen one case showing 60% (Haldane)) is of little importance to the patient since it disappears within 24 hours of the cessation of treatment

The treatment after the operation is very similar to what it was before, potassium bromide being given and a light diet ordered. The patient should be kept as quiet as possible, and no visitors should be allowed. The catheter is used for irrigation of the bladder twice a day, and it is removed at the end of two days. Perineal section and opening of the bladder so as to drain the urine behind the site of the wound may be recommended in a few cases, but I am doubtful of its efficacy. The superficial sutures are removed later but bias should be toward their retention rather than their removal. Dermatol (Merck) is used for dusting the gauze, which comes away when the salmon-gut sutures are removed. This method of operation has also been performed for the minor degrees of hypospadias.

I must here warn my readers about a certain point. In a large number of cases very inaccurate reports have been made by the clerks and dressers attached to the cases, and these results, therefore, are based perforce only on those cases about which careful notes have been made. *Out of the total of 101 cases, 65 are carefully reported*, but whenever an operation was performed careful notes were made in most cases so that the Table is accurate.

RESULTS OF THE MAJOR OPERATION

(1) Notes poor, anatomy not stated, Cases, 5 total success 0, partial success 2, failure 3

(2) Anatomy known Concealed hypospadias, none done

Type	No of cases	Total success	Partial success	Failure
Glandular	2	2	—	—
Coronal	3	1	1	1
Post coronal	7	4	2	1
Corporeal	2	2	—	—
Peno scrotal	1	1	—	—
Scrotal	1	—	—	1
Perineal	6	6	—	—
Total	22	16	3	3

By "total success" is meant that the patient had a normal passage, through the meatal end of which he passed water. By "partial success" is meant that there was some improvement either in the ease or the direction of the flow of urine. The term "failure" means that the operation failed in its design. There was one death—the failure of the operation done for the scrotal type. The patient was an intensely nervous man who developed suppression after the operation and died from uræmia. There were great difficulties associated with this case, rather of a domestic medical nature.

In conclusion it may be stated that only two thirds of these cases were properly noted and observed. This may mean that the condition was not noted by the patient, but it also leads to the inevitable conclusion that the students were not very painstaking. If this paper leads to an improvement in this respect then the writer will be fully satisfied.

Municipal Hospital at Hereford.—On July 30th Queen Mary laid the foundation stone of the new hospital which is being built by the Herefordshire County Council at Hereford at a cost of between £60,000 and £70,000.

SULPHÆMOGLOBINÆMIA

ITS CAUSE AND PREVENTION, WITH SPECIAL REFERENCE TO TREATMENT WITH SULPHANILAMIDE

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The condition originally called enterogenous cyanosis, thought to be due to intestinal toxæmia, has been shown to be due to the presence of sulphæmoglobin or methæmoglobin in the blood, and the large majority of cases reported are associated with prolonged or otherwise excessive ingestion of drugs derived from aniline or nitrobenzene, of which the *most important are phenacetin (Snapper 1922)*, acetanilide (Todd 1926), methylacetanilide (Raven 1928), the more recently introduced sulphanilamide (Colebrook and Kenny 1936, Discombe 1937, Kane 1937, Paton and Eaton 1937), and nitrobenzene itself, the last usually being incriminated in cases of shoe dye poisoning (Levin 1927). There are, however, some cases of undoubted true enterogenous cyanosis not associated with drugs (van den Bergh and Engelkes 1922, Parsons 1924).

The mechanism by which methæmoglobin is produced in these cases is not yet understood, but the process of formation of sulphæmoglobin is quite clear. Snapper (1922) first showed that phenacetin administered to dogs produced methæmoglobinæmia, but if precipitated sulphur were given simultaneously a sulphæmoglobinæmia developed instead; he was led to this experiment by the observation that two patients with sulphæmoglobinæmia had received phenacetin continuously for about a year, and ceased to be cyanosed after this drug was forbidden, though the cyanosis rapidly returned when more phenacetin was given. This work was continued by van den Bergh and Wieringa (1925), who showed that hydrogen sulphide could react with hæmoglobin only in presence of oxygen (though minute traces were sufficient), and that this combination was accelerated, or catalysed, by the presence of certain substances, all of which were simple derivatives of aniline or hydrazine.

The mechanism by which sulphæmoglobin is formed in vivo is thus demonstrated. Hydrogen sulphide is constantly absorbed from the large gut, being formed therein by the action of bacteria on food residues, or as a result of the administration of elementary sulphur, which is known to be absorbed partly as sulphide. This absorbed hydrogen sulphide is, under normal conditions, partly destroyed by the plasma, and partly excreted by the lungs (Haggard 1921). If a grossly excessive amount of hydrogen sulphide is formed, or if a normal amount of hydrogen sulphide is formed when a catalyst for the combination of hæmoglobin with hydrogen sulphide is present in the blood, some of the sulphide will combine with the hæmoglobin in the erythrocyte, and since this cell, which has a life of several weeks, is not lysed, in course of time a detectable sulphæmoglobinæmia will develop. The time which will elapse before sulphæmoglobin is detected will depend, of course, on the amount of hydrogen sulphide absorbed from the gut, on the nature and quantity of the catalyst administered, and on the delicacy of the technique available for the detection of sulphæmoglobin.

That this reasoning holds for the sulphæmoglobinæmia which follows sulphanilamide treatment is shown by the following experiments.

1. *Catalysis by sulphanilamide of the reaction between hydrogen sulphide and hæmoglobin.*—This has been demonstrated by mixing the reactants diluted with a phosphate buffer solution diluted in one case with water, in the other with a saturated solution of sulphanilamide. Thus 8 c.cm. of a 0·078 per cent. solution of potassium dihydrogen phosphate and 2 c.cm. of a 11·876 per cent. solution of disodium hydrogen phosphate in water were diluted to 100 c.cm. with water. A second solution was made by diluting the same phosphate mixture to 100 c.cm. with a saturated solution of sulphanilamide. The sulphanilamide buffer solution was allowed to settle till clear, and the supernatant fluid used. No difference in pH could be detected between the tubes (pH 6·8).

In a 6 in. by 1 in. test-tube were placed 20 c.cm. buffer solution, 0·5 c.cm. of laked blood and 0·5 c.cm. of a very dilute solution of ammonium sulphide; in a similar tube were placed equal volumes of sulphanilamide buffer, blood and ammonium sulphide. The two tubes were examined spectroscopically both along the long axis (2 in. column of fluid) and transversely (1 in. column) and the time which elapsed before the α band of sulphæmoglobin could be seen was recorded.

In one experiment it was found that in the control tube the band could be just seen after 10 minutes when looking down the long axis of the tube, and was definite only after 20 minutes; viewed transversely the corresponding times were 29 and 55 minutes. When sulphanilamide was present these times were reduced to 3½, 7, 11 and 21 minutes respectively.

The results of the first experiments confirm the hypothesis of Snapper and van den Bergh and are not in agreement with a recent publication on the subject. To demonstrate the catalysis it is necessary to use much higher concentrations of catalyst than are possible in vivo and to use only traces of sulphide to keep the reaction from too rapid completion.

2. *Production of sulphæmoglobinæmia in a volunteer.*—The subject, one of us (G. D.), was given the drugs investigated for periods of three days and intervals of a week or more were allowed to elapse between tests. He was given first 3 grammes sulphanilamide daily, then 12 grains of calx sulphurata daily, and then both together with no unusual effects. Later he was given 2 g. sulphur daily for three days and no sulphæmoglobinæmia could be detected; but when he took 2 g. sulphanilamide and 1·2 g. sulphur during one day sulphæmoglobin could be detected in his blood the following morning.

It is highly probable that all drugs containing the group $C_6H_5N<$ are capable of causing methæmoglobinæmia and of facilitating the production of sulphæmoglobin. If any new drug containing this group is administered in large doses such complications should be anticipated. In some cases the catalytic action on the hæmoglobin-sulphide reaction may be demonstrated in vitro, in other cases this may prove difficult or impossible—for example when the drug is almost insoluble in water. For such insoluble drugs trial on suitable animals will be necessary.

ACTION OF MAGNESIUM SULPHATE

The action of magnesium sulphate in accelerating the production of sulphæmoglobinæmia is less easy to understand. Dr. George Graham has pointed out to us that this substance appears to increase the production of hydrogen sulphide in the gut, so far as may be judged by observation; excessive quantities of hydrogen sulphide may be produced by other purges, but the effect is more marked and constant with saline purges than with others.

For this reason and because of the great absorption of energy required to effect the reduction of sulphates to sulphides we think it improbable that the hydrogen sulphide formed after administration of sulphates is derived by reduction of the sulphate. An alternative explanation is possible and in our opinion more probable. In the gut magnesium sulphate is dissociated into magnesium and sulphate ions; the magnesium usually forms some insoluble compound, while the sulphate ion remains in solution and only traces are absorbed. The presence of this unabsorbed dissolved material increases the osmotic pressure of the gut contents so that water will pass from the body fluids into the lumen of the gut (cf. Witts 1937). Absorption of fluid from the colon will be correspondingly reduced, and the more liquid contents of the colon will form an admirable medium for the growth of bacteria; further, by the action of purges the absorption of food is decreased and more passes to the colon unabsorbed. Since many bacteria normally present in the colon split cystine to form hydrogen sulphide an increased production of hydrogen sulphide may reasonably be expected.

Any treatment which helps the formation of a liquid stool may be expected to accelerate the formation of sulphæmoglobinæmia. Liquid paraffin, since it acts as a mechanical lubricant, is the only laxative which can be relied on to prevent the formation of scybala without the risk of accelerating the appearance of sulphæmoglobinæmia. If liquid paraffin is insufficient, or if constipation is severe, it may be necessary to use enemata, the residues from which are rapidly absorbed, leaving the gut clean and dry.

TREATMENT TO PREVENT SULPHÆMOGLOBINÆMIA

We have therefore designed a régime for patients who are treated with sulphanilamide in the hope of preventing or at least delaying the onset of sulphæmoglobinæmia. We consider this justifiable since it is impossible to decide, before treatment is started, how long it will be necessary to continue with this drug, while extreme degrees of sulphæmoglobinæmia *must* be avoided since they may lead to dyspnœa relieved only by blood transfusion.[1] Abstention from purges is not in our experience enough to prevent the development of sulphæmoglobinæmia.

Our aim has been to maintain the colon as free as possible from food residues and from water so that bacterial decomposition should be reduced to a minimum. To this end the patient is placed on a low residue diet of calorific value sufficient to provide for the increased metabolism due to the pyrexia; only the minimum number of eggs (one or two daily) are given, since these contain, for the same weight of protein, two or three times as much sulphur as other foods. Miss M. Abrahams, the hospital dietitian, has informed us that it is not difficult to produce a low residue diet containing as much as 3500 calories (typhoid-convalescent diet); since a 14 st. man 6 ft. 1 in. tall has a basal requirement of only 1980 calories daily this should suffice even if his average temperature rose to 104° (we have not used diets as large as this). Unless diarrhœa is present 30–45 c.cm. liquid paraffin is given daily and all other aperients are forbidden. If constipation develops, enemata are given, while if the patient has recently received magnesium sulphate the colon should be thoroughly washed out.

One further precaution is desirable. Phenacetin is a most useful analgesic drug, but is itself capable of facilitating the formation of sulph- and methæmoglobin. For this reason its use with patients who are receiving sulphanilamide should if possible be avoided, though if the diet is satisfactory and no laxatives are used it seems fairly safe This may be too rigorous a precaution, but is reasonable since sulphanilamide can produce agranulocytosis (Nettle 1937, Young 1937), and little is known of any synergistic actions in this group In most of the cases recorded here all coal tar drugs have been avoided, and if given the total dose is specified

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[1] In contrast methaemoglobinaemia, however intense (we have seen one case showing 60% (Haldane)), is of little importance to the patient, since it disappears within 24 hours of the cessation of treatment.

CASE REPORTS

Cases 1–9 show that this treatment is reasonably, though not completely, successful. Case 10 shows sulphæmoglobinæmia following purgation with calomel, Case 11 shows a hitherto undescribed toxic reaction, Cases 13–15 received benzyl sulphanilamide (Proseptasine) and Soluseptasine, it is interesting to note that these substances also can induce sulphæmoglobinæmia, Cases 12, 16, and 17 are discussed in detail separately, since they illustrate points of special interest

CASE 1—A. B Aged 16 Ulcerative colitis Received 60 g sulphanilamide in 20 days, low residue diet, no laxatives, passage of fæces through colon abnormally rapid No abnormal pigment was detected in the patient's blood

CASE 2—Miss C D Aged 10 Acute nephritis Received 15 g in 12 days Diet with very little residue almost free from protein, occasional aperient (cascara) No abnormal pigments found in the patient's blood

CASE 3—Miss E F Aged 35 Erysipelas, osteomyelitis right tibia Received 48 g in 12 days On admission received a single dose of magnesium sulphate three days later transferred to a low residue diet, with liquid paraffin, and sulphanilamide treatment started Methæmoglobin was present on the 5th, 10th, and 12th days of treatment, slight cyanosis being observed on the last occasion No sulphæmoglobin could be detected.

CASE 4—Mrs G H Aged 66 Cellulitis right foot and leg, ulcer on plantar aspect of first metatarso
phalangeal joint, diabetes mellitus Receive in
5 days low residue diet, liquid paraffin. N al
pigments found in her blood (Several of is
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the fifth day after cessation of treatment, this is sufficient to show that only traces of sulphæmoglobin could have been present during treatment

CASE 8—Mrs O P Aged 34 *B coli* infection of urinary tract This patient was placed on a low residue diet for 3 days before sulphanilamide was given After 6 g had been given she appeared cyanosed, and a *faint band of sulphæmoglobin, insufficient to cause cyanosis*, was observed in her blood Treatment was suspended and resumed after 10 days After 10 days' treatment (30 g) and on the 18th day (57 g) methæmoglobin, but no sulphæmoglobin, could be detected in her blood

CASE 9—Mrs Q R Aged 46 Deep X ray treatment of an ulcerating post cricoid carcinoma streptococcal septicæmia In 11 days 35 g sulphanilamide was given, on the 13th day from the start of this treatment a definite, though weak, band of sulphæmoglobin could be seen in her blood, though she had received a low residue diet and liquid paraffin Cyanosis was not observed

CASE 10—Miss S T Aged 17 Post-partum pyrexia On March 11th received 3 grains of calomel, on this and the next two days received a total of 3 9 grammes sulphanilamide orally and 60 c cm prontosil soluble intramuscularly On the 18th she was deeply cyanosed with marked sulphæmoglobinæmia She received no sulphates

CASE 11—Miss U V Aged 15 Erysipelas After 1 g sulphanilamide her temperature fell abruptly to normal, during the next 32 hours she received 6 g sulphanilamide After 5 g had been given she was observed to be very drowsy, after the last dose her temperature fell to 97°, pulse 90, weak respirations 25, shallow, she appeared collapsed, and was heavily cyanosed During the next few hours she rapidly recovered, and eight hours later appeared almost normal, though methæmoglobin could be demonstrated in her blood

This appears to be a true case of sulphanilamide idiosyncrasy, as opposed to an ordinary met- or sulphæmoglobinæmia

CASE 12—Miss C W Aged 48 Drainage of para nasal sinuses, erysipelas of face Admitted June 14th, operation on 15th Between June 16th and 22nd received 7 6 g phenacetin, with frequent doses of magnesium sulphate On June 21st she received two 30 c cm doses of mist sennæ co (B P C) and on the 22nd one dose No stool was passed on the 21st or 23rd and only one on the 22nd and 24th On the 23rd she was placed on a low
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Aged 42 *B coli* infection of
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CASE 15.—Y B Aged 30 Septic endocarditis (*Streptococcus salivarius*) In 23 days received 00 g benzyl sulphanilamide orally and 110 c.cm soluseptasine intramuscularly and in the next 9 days 36 g sulphanilamide orally Low residue diet liquid paraffin No abnormal pigments could be detected in his blood either on the 15th the 23rd, or the 32nd day of treatment

USE OF OTHER DRUGS

We have mentioned above that the use of coal tar drugs should be avoided. The uncritical use of any analgesic or hypnotic drug can endanger life and when drugs such as sulphanilamide are used the clinical picture may become so complicated that recourse to the laboratory is essential Such a case may be of interest

CASE 16 —Mrs. X. C Aged 26 Septic abortion. This patient was admitted from a nursing home with a diagnosis of prontosil poisoning She was deeply cyanosed though the cyanosis was not of the peculiar leaden hue caused by sulphæmoglobin very weak almost comatose, though she could be roused to answer questions and smelt strongly of paraldehyde Temperature 08·4 respirations 25 pulse rate 80 A moderately strong band of sulphæmoglobin could be demonstrated in her blood but the concentration of this pigment was only 2 9 g per 100 c cm (method of Bloem 1033) corresponding to 21 per cent Haldane while the oxygen-combining power was 9·0 c cm per 100 c cm blood or 63 5 per cent Haldane For this reason it was concluded that the cyanosis was not a direct result of the sulphanilamide treatment but was due mainly to the over-enthusiastic use of paraldehyde and possibly other drugs The treatment was simple—rest and plenty of fluids by mouth When seen 36 hours later the cyanosis had completely disappeared the patient was cheerful and appeared anxious to leave as soon as possible she was discharged after 10 days

IMPORTANCE OF SPECTROSCOPIC EXAMINATION OF THE BLOOD

The importance of spectroscopic examination of the blood of patients who develop cyanosis when treated with sulphanilamide cannot be exaggerated. Cyanosis following sulphanilamide is not invariably due to met or sulphæmoglobinæmia methæmoglobin cyanosis often diminishes in intensity when the dose of drug is increased We have seen patients develop cyanosis and sulphæmoglobinæmia simultaneously yet the concentration of sulphæmoglobin remained far too low to account for the cyanosis (Cases 16 and 17) In such cases spectroscopic examination of the blood followed by an approximate estimate of the concentration of sulphæmoglobin by a simple method such as that of Bloem may be of great value to the clinician It must be remembered that it is possible to detect sulphæmoglobin in blood when its concentration becomes greater than that corresponding to 4 per cent. hæmoglobin (Haldane) Cyanosis becomes notable when about 30 per cent. hæmoglobin has been converted The spectroscopic test used on all these patients is therefore some seven times more sensitive than clinical examination

CASE 17 —Miss W D Aged 26 Pyrexia following left antrostomy In 3 days received 0 g sulphanilamide in the previous 15 days had received 13 g phenacetin during these periods occasional doses of magnesium sulphate were given On the third day of sulphanilamide treatment a very slight cyanosis was observed the patient's blood contained a small quantity of sulphæmoglobin insufficient to account for any cyanosis On physical examination evidence of pneumonia was found

SUMMARY

1 The intracorpuscular sulphæmoglobinæmia associated with the administration of drugs derived from aniline results from the combination of hæmoglobin with the hydrogen sulphide absorbed from the intestinal tract this reaction is catalysed by the drug circulating in the blood.

2 The normal absorption of protein digestion products in the small intestine is diminished by purgation causing increased putrefaction in the colon and a production of hydrogen sulphide much in excess of normal Saline cathartics are most active in this process because their osmotic action maintains the contents of the colon in a semi fluid state thus accelerating putrefaction.

3 The development of sulphæmoglobinæmia can be prevented or considerably delayed by keeping the colon free from food residues by (1) cleansing the colon with enemata before treatment is started if purges have previously been given (2) giving the patient a low residue diet, of adequate calorie value containing few eggs (3) giving large regular doses of liquid paraffin

4 In treatment with sulphanilamide it is important to examine spectroscopically the blood of all patients who develop cyanosis for occasionally the cyanosis is due not to the presence of abnormal pigments in the blood but to the development of some other organic disease such as pneumonia

We are indebted to Dr A E Gow Prof L J Witts, Dr Geoffrey Evans, Mr Geoffrey Keynes Mr Sydney Scott Mr Bedford Russell Mr J B Hume Dr Wilfred Shaw Mr F C W Capps Mr R T Payne and Mr H. W Rodgers for permission to describe their cases to their house physicians and house surgeons for their enthusiastic coöperation; to Dr George Graham and to Miss M Abrahams for their advice; and to those who in conversation have helped to clarify our ideas

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FATAL HÆMATEMESIS AND MELÆNA

BY LAURANCE D W SCOTT M.B Ch B Glasg
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DISPENSARY PHYSICIAN WESTERN INFIRMARY OF GLASGOW

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THE widely differing mortality rates from gross hæmatemesis and melæna given by various authors have been tabulated by Babey and Hurst (1930) The figures vary from 1 per cent (Meulengracht 1935) to 25 per cent (Chiesman 1032) and there can be little doubt that the greatest part of this variation is due to the differences of opinion as to what degree of bleeding constitutes gross hæmatemesis It is evident that when all cases of bleeding are taken into account the death rate is low; but Chiesman Aitken (1034) and Lloyd Davies and Nevin (1031) have shown that the mortality is very high if only severe cases are considered. In connexion with this last group in receiving sulphanilamide should if possible be avoided, though if the diet is satisfactory and no laxatives are used it seems fairly safe This may be too rigorous a precaution, but is reasonable since sulphanilamide can produce agranulocytosis (Nettle 1937, Young 1937), and little is known of any synergistic actions in this group In most of the cases recorded here all coal tar drugs have been avoided, and if given the total dose is specified.

CASE REPORTS

Cases 1–9 show that this treatment is reasonably, though not completely, successful. Case 10 shows sulphæmoglobinæmia following purgation with calomel, Case 11 shows a hitherto undescribed toxic reaction, Cases 13–15 received benzyl sulphanilamide (Proseptasine) and Soluseptasine, it is interesting to note that these substances also can induce sulphæmoglobinæmia, Cases 12, 16, and 17 are discussed in detail separately, since they illustrate points of special interest

CASE 1 —A B Aged 16 Ulcerative colitis Received 60 g sulphanilamide in 20 days, low residue diet, no laxatives, passage of fæces through colon abnormally rapid No abnormal pigment was detected in the patient's blood

CASE 2 —Miss C D Aged 10 Acute nephritis Received 15 g in 12 days Diet with very little residue almost free from protein, occasional aperient (cascara) No abnormal pigments found in the patient's blood

CASE 3 —Miss E F Aged 35 Erysipelas, osteomyelitis right tibia Received 48 g in 12 days On admission received a single dose of magnesium sulphate, three days later transferred to a low residue diet, with liquid paraffin, and sulphanilamide treatment started Methæmoglobin was present on the 5th, 10th, and 12th days of treatment, slight cyanosis being observed on the last occasion No sulphæmoglobin could be detected

CASE 4 —Mrs G H Aged 66 Cellulitis right foot and leg, ulcer on plantar aspect of first metatarso phalangeal joint diabetes mellitus Received 15 g in 5 days, low residue diet liquid paraffin. No abnormal pigments found in her blood (Several other patients receiving small doses have been seen, none have developed sulphæmoglobinæmia)

CASE 5 —Miss I J Aged 17 Axillary abscess, drainage, septicæmia, hæmolytic streptococci grown in blood culture Received a total of 68 g in 15 days On the 13th day of treatment was markedly cyanosed, with methæmoglobinæmia (53 g) on the 16th day, 12 hours after the last dose of sulphanilamide, the cyanosis had disappeared, though a slight methæmoglobinæmia remained, on neither occasion could sulphæmoglobin be detected

CASE 6 —K L Meningococcal meningitis (Type I meningococcus) In the 48 hours following admission received 152 c cm meningococcal antitoxin, and 80 c cm Prontosil soluble In the next 11 days received 36 g sulphanilamide and 7 3 g phenacetin Examination on the 14th day after admission showed no abnormal pigments in his blood His diet contained little residue, he received four doses of the pulvis ipecacuanha co (B.P C) during the first 4 days in hospital No purgatives were given

CASE 7 —M N Aged 56 Tuberculous abscess second right rib, involving sternoclavicular joint miliary tuberculosis, hæmolytic streptococcal infection of biopsy wound, streptococcal septicæmia On May 10th the abscess was opened and the walls scraped On May 2nd and 18th hæmolytic streptococci were grown from his throat and on June 1st from the wound Two courses of sulphanilamide from May 14th to 24th and from June 4th to 19th were given total 96 g During the courses a low residue diet and liquid paraffin were given but before and between these courses frequent doses of magnesium sulphate were given On examination on June 24th no abnormal pigment could be detected in the blood although this was the fifth day after cessation of treatment, this is sufficient to show that only traces of sulphæmoglobin could have been present during treatment

CASE 8 —Mrs O P Aged 34 *B coli* infection of urinary tract This patient was placed on a low residue diet for 3 days before sulphanilamide was given After 6 g had been given she appeared cyanosed, and a faint band of sulphæmoglobin, insufficient to cause cyanosis, was observed in her blood Treatment was suspended and resumed after 10 days After 10 days' treatment (30 g) and on the 18th day (57 g) methæmoglobin, but no sulphæmoglobin, could be detected in her blood

CASE 9 —*Mrs Q R Aged 46 Deep X ray treatment* of an ulcerating post cricoid carcinoma, streptococcal septicæmia In 11 days 35 g sulphanilamide was given, on the 13th day from the start of this treatment a definite, though weak, band of sulphæmoglobin could be seen in her blood, though she had received a low residue diet and liquid paraffin Cyanosis was not observed

CASE 10 —Miss S T Aged 17 Post partum pyrexia On March 11th received 3 grains of calomel, on this and the next two days received a total of 3 9 grammes sulphanilamide orally and 60 c cm prontosil soluble intramuscularly On the 18th she was deeply cyanosed with marked sulphæmoglobinæmia She received no sulphates

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This appears to be a true case of sulphanilamide idiosyncrasy, as opposed to an ordinary met- or sulphæmoglobinæmia

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It seems probable that in this case the partly successful attempts at purgation on the 21st and 22nd had filled the colon with moist food residues, so that sulphæmoglobinæmia might have been anticipated. In such cases it is probably essential to give enemata, or better a thorough colonic lavage, before starting sulphanilamide

CASE 13 —Miss Y Z Aged 42 *B coli* infection of urinary tract Diet, vegetable and fruit purées, no laxatives or drugs other than benzyl sulphanilamide (proseptasine) and soluseptasine Between June 12th and 17th received 35 g proseptasine orally and 35 c cm soluseptasine intramuscularly On the 17th a weak band of sulphæmoglobin could be detected in the patient's blood

CASE 14 —Miss Z A Aged 49 Peptic ulcer *B coli* infection of urinary tract Diet, vegetable and fruit purées, received in 5 days 28 g benzyl sulphanilamide and 35 c cm soluseptasine, during the same period received also ferric ammonium citrate 90 grains and ammonium carbonate 3 grains daily On the fifth day a faint band of sulphæmoglobin could be seen in this patient's blood

Neither Case 13 nor Case 14 received a low residue diet, though the only laxative permitted was liquid paraffin, since one patient had a hæmoglobin of only 28 per cent Haldane, the occurrence of sulphæmoglobinæmia was of importance

CASE 15.—Y B Aged 30 Septic endocarditis (*Streptococcus salivarius*) In 23 days received 90 g benzyl sulphanilamide orally and 110 c cm soluseptasine intramuscularly and in the next 9 days 36 g sulphanilamide orally Low residue diet liquid paraffin No abnormal pigments could be detected in his blood either on the 15th the 23rd, or the 32nd day of treatment

USE OF OTHER DRUGS

We have mentioned above that the use of coal tar drugs should be avoided The uncritical use of any analgesic or hypnotic drug can endanger life, and when drugs such as sulphanilamide are used the clinical picture may become so complicated that recourse to the laboratory is essential Such a case may be of interest

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CASE 17 —Miss W D Aged 20 Pyrexia following left antrostomy In 3 days received 9 g sulphanilamide in the previous 15 days had received 13 g phenacetin during these periods occasional doses of magnesium sulphate were given On the third day of sulphanilamide treatment a very slight cyanosis was observed the patient's blood contained a small quantity of sulphæmoglobin insufficient to account for any cyanosis On physical examination evidence of pneumonia was found

SUMMARY

1 The intracorpuscular sulphæmoglobinæmia associated with the administration of drugs derived from aniline results from the combination of hæmoglobin with the hydrogen sulphide absorbed from the intestinal tract; this reaction is catalysed by the drug circulating in the blood.

2 The normal absorption of protein digestion products in the small intestine is diminished by purgation causing increased putrefaction in the colon and a production of hydrogen sulphide much in excess of normal Saline cathartics are most active in this process because their osmotic action maintains the contents of the colon in a semi fluid state thus accelerating putrefaction

3 The development of sulphæmoglobinæmia can be prevented or considerably delayed by keeping the colon free from food residues by (1) cleansing the colon with enemata before treatment is started if purges have previously been given (2) giving the patient a low residue diet of adequate calorie value, containing few eggs (3) giving large regular doses of liquid paraffin

4 In treatment with sulphanilamide it is important to examine spectroscopically the blood of all patients who develop cyanosis for occasionally the cyanosis is due not to the presence of abnormal pigments in the blood but to the development of some other organic disease such as pneumonia

We are indebted to Dr A. E Gow Prof L J Witts, Dr Geoffrey Evans Mr Geoffrey Keynes, Mr Sydney Scott Mr Bedford Russell Mr J B Hume Dr Wilfred Shaw Mr F C W Capps, Mr R T Payne and Mr H. W Rodgers for permission to describe their cases to their house physicians and house surgeons for their enthusiastic coöperation; to Dr George Graham and to Miss M Abrahams for their advice; and to those who in conversation have helped to clarify our ideas

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FATAL HÆMATEMESIS AND MELÆNA

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THE widely differing mortality rates from gross hæmatemesis and melæna given by various authors have been tabulated by Babey and Hurst (1930) The figures vary from 1 per cent (Meulengracht 1935) to 25 per cent (Chiesman 1932) and there can be little doubt that the greatest part of this variation is due to the differences of opinion as to what degree of bleeding constitutes gross hæmatemesis It is evident that when all cases of bleeding are taken into account the death rate is low but Chiesman Aitken (1934) and Lloyd Davies and Nevin (1934) have shown that the mortality is very high if only severe cases are considered In connexion with this last group in

On June 14th theophylline 0 6 g intravenously alone was without effect and only transient abolition of the Cheyne Stokes breathing was achieved by 0 16 g ethylenediamine given a few minutes later On the 15th, 0 48 g euphyllin intravenously abolished the Cheyne Stokes respiration completely for two hours

This series of observations is of interest in that it seems to show that a single injection of the compound theophylline ethylenediamine may be more effective than its two components given separately in succession The action of euphyllin on this patient was not so prolonged as in Case 1 After the final injection, Cheyne Stokes breathing had returned in two hours

CASE 3 *Chronic bronchitis and hypertensive heart failure*—An unemployed miner aged 53 Cough, head aches, and breathlessness for five years For six months he has had attacks of breathlessness which come on as he is falling off to sleep These waken him and he fights for breath till the attack passes off There was œdema of the legs, blood pressure 170/110, heart enlarged, no murmurs, rhonchi and crepitations all over the lungs, the latter most marked at the bases, blood urea 32 mg per 100 c cm

On June 22nd Cheyne Stokes breathing was pronounced It was abolished by 0 60 g euphyllin intravenously, but returned ten minutes after the injection The action in this case was transient and the patient was not aware of any subjective improvement

CASE 4 *Rheumatic heart disease*—A teacher aged 49 History of severe rheumatic fever when aged 11 but, in spite of known cardiac damage, he was capable of considerable exertion including Alpine climbing For eight years he has been incapable of such severe exercise, and has become increasingly breathless Five months before admission to hospital he had influenza and since then he has been orthopnœic The patient showed slight œdema of the ankles, enlargement of the liver, a tinge of jaundice, and engorgement of the veins of the neck up to the angle of the jaw Blood pressure was 128/60 The heart was grossly enlarged, with systolic and diastolic murmurs at the aortic and mitral areas The lungs showed œdema at the extreme bases The patient had pronounced periodic waxing and waning of respiration, he often had attacks of severe breathlessness particularly at night, which made sleep impossible without morphine

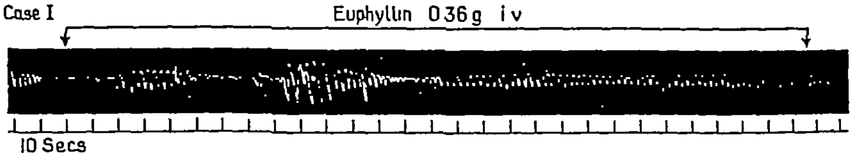

FIG 1 (CASE 1)—Note the order of effects of intravenous injection of euphyllin (1) the increased depth of respiration in the hyperpnœic phase (2) the shortening of the apnœic pause (3) the diminution of periodicity leading on to completely normal respiration

On June 8th an intravenous injection of 0 48 g euphyllin was given, *resulting in the abolition of periodic respiration* (Fig 4) At the same time the patient stated that he could see better that his mind became clear, and that his breathing became easier and perfectly steady In his own words "the difference in breathing was almost unbelievable" That night he had a long undisturbed sleep without a sedative

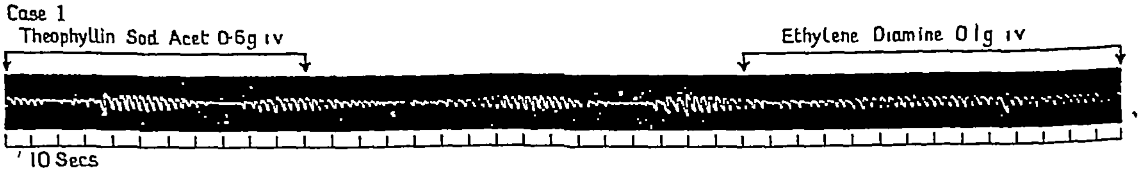

FIG 2 (CASE 1)—Theophyllin alone is devoid of action which is produced however by ethylene diamine

On June 10th a respiratory record was taken to show the effect of the two components of euphyllin Following the injection of 0 1 g ethylenediamine the respirations suddenly became very deep and rapid with much subjective distress and anxiety This condition was regarded by the patient as similar to the nocturnal attacks of dyspnœa which wake him up so frequently After about two minutes the hyperpnœa subsided but there was no apnœic pause the respiration continuing in a steady regular fashion with complete disappearance of periodicity A few minutes later 0 6 g theophylline was given intravenously, with no obvious additional change (Fig 5) After a quarter of an hour he was found to have lapsed into periodic respiration once again A further injection of 0 48 g euphyllin was given with the same effect as on the previous occasion—i e, immediate subjective improvement and abolition of the periodic respiration That night (four hours later) a stethograph record of the respiration showed no periodicity whatsoever He had an excellent sleep for seven hours, and was even able to lie flat Twenty two hours after the injection the respiration was still regular, but twenty four hours later the periodic breathing had returned

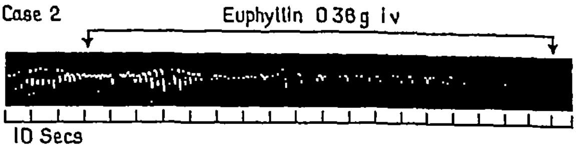

FIG 3 (CASE 2)—Abolition of Cheyne Stokes breathing by euphyllin

The beneficial action of euphyllin in this patient was pronounced and maintained sufficiently long to ensure better sleep than he had had hitherto

MODE OF ACTION

That ethylenediamine stimulates respiration was first suggested by Barbour and Hjort (1920), although acceleration of respiration from the injection of other amines had already been shown—e g, allyl amine (Piazza 1915) In the experiments of Barbour and Hjort there was, in addition to the respiratory action, a fall in blood pressure which would be sufficient to account for increased pulmonary ventilation, a fall of pressure in the carotid sinus producing this effect (Heymans and others 1933) There is thus no conclusive proof from animal experiments that ethylene diamine stimulates the respiratory centre, although Vogl (1932) holds that this is the mode of action of euphyllin He bases this view on (1) the almost instantaneous action of the drug in Cheyne Stokes breathing, and (2) its action in rousing comatose patients to wakefulness Guggenheimer (1932, 1933), however, maintains that the action on respiration is produced mainly by changes in the cerebral circulation, effected by dilatation of the cerebral arteries and aided by increased cardiac efficiency brought about by coronary vasodilatation Guggenheimer's view is supported by Paul and others (1937) who regard a fall in venous and intrathecal pressures produced by euphyllin as suggestive of an improved cerebral circulation

It is generally thought that the common underlying basis of Cheyne Stokes respiration is depression of the medullary respiratory centres Oxygen lack which has been shown by Smyth (1937) to depress the medullary respiratory centre, is probably the cause of the depression in cases of cardiovascular disease such as those described above On this assumption depression of the respiratory centre may be abolished by euphyllin by one or both of the two suggested mechanisms (a) a direct stimulating action of the drug on the respiratory centre independent of circulatory changes (b) an increased circulation through the respiratory centre improving its oxygen supply

(a) Direct stimulation of the respiratory centre would be expected to produce the following changes :—

1 Increased pulmonary ventilation with resulting lowering of alveolar CO_2 tension and lowering of the CO_2 content of arterial blood

2. Similar changes should be demonstrable on the normally acting respiratory centre as well as on that depressed by oxygen lack. If euphyllin caused an increased blood flow through the normal respiratory centre there would result a decreased rather than an increased pulmonary ventilation (McMichael 1037) Hence an increased pulmonary ventilation in normal subjects would favour the view of direct stimulation of the centre

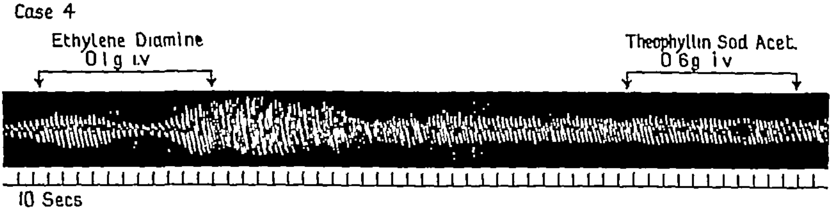

FIG 5 (CASE 1).—Effect of 0 1 g ethylene diamine A great increase in rate and depth of respiration takes place followed by restoration to normal respiratory rhythm No further action is produced by theophyllin

INCREASED PULMONARY VENTILATION

Pulmonary ventilation can be measured by collecting and analysing the expired air in a Douglas bag over a given period of time. The measure of pulmonary ventilation suggested by Anthony (1030) and adopted by Moncrieff (1934) is the ventilation equivalent or the pulmonary ventilation in litres per 100 c cm oxygen consumed It has been shown by one of us (McM) that the ventilation equivalent even at rest varies with changes in the cardiac output For this reason changes in pulmonary ventilation cannot be ascribed to changes in activity of the respiratory centre unless all precautions are taken to keep the circulation rate constant This is best done by making all the observations under the resting conditions of oxygen consumption and in the same (usually reclining) posture Even when these precautions are taken another difficulty may arise when collections of expired air are made over short periods in experimental subjects the conscious influence of the subject is apt to produce either over or under breathing and these influences produce quite artificial shifts in the ventilation equivalent Over breathing or under breathing can however be detected in changes in the respiratory quotient the former tending to raise it by washing out excess of CO_2, while the latter has the converse effect The ventilation equivalent as a criterion for measurement of pulmonary ventilation therefore breaks down in the presence of such artificial alterations of the respiratory quotient. For this reason we have adopted as our criterion for comparison the ventilation equivalent for CO_2—i.e the ventilation in litres per 100 c cm CO_2 expired This automatically compensates for any error introduced by over breathing or under breathing Comparisons were made only when the rate of oxygen consumption remained at approximately the same level before and after euphyllin ensuring in this way a reasonably constant circulation rate.

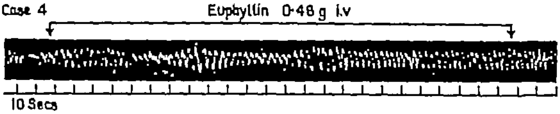

FIG 4 (CASE 4) —Abolition of Cheyne-Stokes breathing by euphyllin

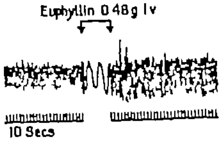

FIG 6 —The effect of euphyllin in increasing the depth of respiration of normal type

Table I shows the exact measurements of pulmonary ventilation made when these criteria were adopted The increase in pulmonary ventilation is obvious in all including the normal subject In addition to these measurements on the ventilation estimated with the Douglas bag the increase in respiration can be shown graphically Fig 6 shows the effect of euphyllin on a patient who was drowsy from a cerebral lesion and in whom the possibility of conscious influence on the respiration was at a minimum. The intravenous injection of 0 48 g. euphyllin was followed by an increase in the depth of respiration which was of normal type throughout the experiment.

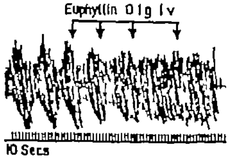

FIG 7.—At each arrow 0 5 c.cm containing 0 1 g euphyllin was injected intravenously The periodicity becomes less pronounced with successive doses and finally disappears

Owing to the difficulty of getting samples of alveolar air from patients this was not attempted In Case 1 however arterial punctures were performed before and after giving euphyllin and the CO_2-content of the arterial blood estimated in a van

Slyke apparatus The blood taken during the Cheyne Stokes phase was a mixed sample taken during apnœa and hyperpnœa

Arterial CO_2 content in vols per cent

Before euphyllin (Cheyne Stokes breathing)	After euphyllin (Normal respiration)
63 1	48 3

The evidence, therefore, of a direct stimulating effect on the respiratory centre is unequivocal Guggenheimer, however, maintains vigorously that any such action is at least enhanced by an increased circulation through the brain, and it is necessary to consider whether such an effect of euphyllin occurs To this end we have made measurements of the more important circulatory functions as follows —

TABLE I

Euphyllin and Pulmonary Ventilation

Subject	Before euphyllin		After 0 48 g euphyllin intravenously		
	O_2 consump (c cm / min)	Ventiln equiv CO_2	O_2 consump (c cm / min)	Ventiln equiv CO_2	Per cent change in pulm ventiln
Cheyne-Stokes breathing					
Case 4	247	6 32	258	7 20	+14
„ 1	205	4 24	209	6 12	+44
„ 2	272	3 92	310	4 20	+ 9
Normal					
J M	323	2 88	328	3 25	+13

Consump = consumption ventiln equiv CO_2 = ventilation equivalent for CO_2

1 *Pulse rate*—In all cases this remained constant throughout the period of injection and after respiration was restored to normal

2 *Blood pressure*—There was no significant change in blood pressure accompanying the euphyllin effect

3 *Electrocardiographic changes*—Continuous electro cardiographic records before, during, and after injection were made in Case 1 No changes were demonstrable in any of the complexes

4 *Cardiac output*—Using Grollman's acetylene method, with all the precautions suggested by one of us (McM) we have measured cardiac output before and after euphyllin in one normal (J M) and one cardiac subject (Case 4) The results are shown in Table II

TABLE II

Euphyllin and Cardiac Output

—	Before euphyllin			After euphyllin		
	A V O_2 diff (c cm / litre)	O_2 consump (c cm / min)	Cardiac output (litres/ min)	A V O_2 diff (c cm / litre)	O_2 consump (c cm / min)	Cardiac output (litres/ min)
Case 4	149	247	1 66	157	258	1 64
Normal (J M)	60 5	323	5 33	62 5	328	5 25

A V = Arterio venous

It is seen that there is no significant change in cardiac output with euphyllin, although the respiratory action, determined in the same experiment, was quite striking in both cases (see Table I) These figures indicate positively that the effect of euphyllin on normal or Cheyne Stokes respiration occurs in the absence of any demonstrable change in the circulation as a whole

It might be argued that without changing the cardiac output or blood pressure, the drug causes a selective vasodilatation of the cerebral vessels altering the distribution of blood in favour of the brain Such an action would produce a diminished pulmonary ventilation in normal subjects, and we have seen that the opposite effect occurs There is thus no reason to believe that euphyllin has any local effect on the cerebral circulation

THERAPEUTIC USE AND MODE OF ADMINISTRATION

The arrest of Cheyne Stokes breathing is not solely a matter of academic interest, for its cessation often seems to give a great measure of subjective relief to the patients It is during the onset of sleep that periodic breathing becomes most pronounced (Harrison and others 1934) The increased hyperpnœa may be very distressing to the patients and often keeps them awake Restoration of normal respiratory rhythm may ensure an easy night's rest

The drug is put up in ampoules of 2 c cm, each containing 0 48 g euphyllin. Vogl suggests that it should be given intravenously, and slowly Half a cubic centimetre is injected as the respiratory movements begin to decline in amplitude, then waiting for the next period of hyperpnœa to decline the second 0 5 c cm is given, continuing in this manner until the whole of the 2 0 c cm. has been injected (Fig 7) The danger of giving the injection rapidly is that its powerful stimulating action on the respiratory centre may be superadded to the often intense dyspnœa of the hyperpnœic phase as in Fig 5 An alternative method is to use the ampoules containing 0 24 g in 10 c cm saline, and give 15–20 c cm of this solution intravenously, taking at least five minutes over the injection

Suppositories are also of some value according to Vogl, but they may be effective only in mild cases He also states that sometimes irritation of the bowel occurs from their use Tablets by mouth may be given, but there is a general belief that theophylline may be irritating to the stomach We have given doses up to 0 5 g by mouth and produced the desired effect in this way, but in the event of sickness it would be better to keep to parenteral administration

SUMMARY AND CONCLUSIONS

1 Euphyllin (theophylline ethylenediamine) has a striking action in abolishing Cheyne Stokes breathing

2 Theophylline alone has no effect on Cheyne Stokes breathing The effect of euphyllin is due mainly to its ethylenediamine component, but euphyllin may sometimes act when ethylenediamine fails

3 The effect is produced by a direct stimulation of the medullary respiratory centres, and it occurs in the absence of any demonstrable changes in the circulation

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OBSERVATIONS ON THE RESPONSE OF THE PULSE-RATE TO EXERCISE IN HEALTHY MEN

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H E Magee, M D Aberd. M.B Belf

AND

E Major

Among those concerned with the assessment of the state of nutrition there is a fairly general desire for suitable objective tests which would make it possible to appraise the nutritional condition of children with greater certainty than is possible with the more subjective methods at present in use The physical fitness of individuals is largely dependent on the state of nutrition and as the response of the pulse-rate to muscular exercise is often used as a criterion of physical fitness it was decided to make a study of the test on a selected group of physically fit individuals with a view to exploring its value for determining the state of nutrition of children. Previous workers who have employed the test have reported much variation in the response in different individuals and in the same individual at different times.

The main objective of the present study was to determine whether the response of the pulse-rate *to a standard amount of exercise is sufficiently constant* in a small select group of healthy people to justify the use of the term normal response If individuals in perfect health were found to exhibit wide variations in their reactions, then the test could obviously not be regarded as of any practical value If on the other hand, the test gave promising results it might well have a wide application. For this purpose it was essential that both the methods and the apparatus used should be simple. These conditions were fulfilled in the studies reported in this paper

METHODS

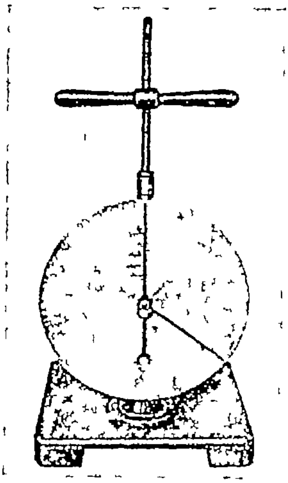
The subjects were students attending the Carnegie Physical Training College, Leeds. They were all physically fit men aged 21–26 undergoing training for physical training instructors Before admission to the College they had to pass a strict medical examination and to carry out *satisfactorily certain* physical tests The College curriculum includes, besides lectures and laboratory work gymnastic exercises daily and all students take part in field games and other sports such as swimming and tennis The subjects were therefore all in an excellent state of training and were probably as fit a group of men as *it is possible to obtain*

Two sets of observations were made the first on 44 students during 1934–35 and the second on 20 during 1935–36

The exercise consisted of two maximum pulls on a dynamometer one following immediately after the other so that the amount of exercise was *relatively the same* for each individual

The *dynamometer* used was designed for work on school children (Magee 1933) It measures the lumbar pull the muscles involved in which—namely those of the thigh gluteal region and trunk—are less likely to be specially developed in some individuals than the muscles concerned for example in the hand grip (see Figure) The handle of the instrument is adjustable The level of the upper border of the patella was found after extensive trials to be the most suitable position If the handle were not kept approximately at this level inconstant readings were obtained In making the pull the subject stands as far as possible directly over the handle with the feet resting on the base of the instrument one on either side of the dial and with the knees kept straight but not rigid The instrument is manufactured by Messrs Salt and Son of Birmingham

The *pulse rate* at the wrist was counted manually In the 1934–35 tests the resting pulse was counted for 60 seconds with the subject standing Before the pulse rate was taken the students had been sitting in the lecture room for an hour had walked about 50 yards to the gymnasium where the tests were carried out and had then stood still for five to ten minutes The pulse counting was all done by the same observer who had had previous experience of the procedure in the course of his training After the resting pulse had been taken the subject made two maximum pulls on the dynamometer *and the observer* then counted the pulse continuously for five minutes with the subject standing the number of beats being called out every 15 seconds and noted by an assistant It is very probable that a beat may have been missed between the end of each 15-second period and the beginning of the next and as the results are recorded as the number of beats per minute the experimental error was probably in the region of ± 4 beats per minute This procedure was practically the same as that described by Woolham and Honeyburne (1927)



The dynamometer

The results obtained in the first series showed some irregularities and it was believed that these were due partly to variation in the interval between the end of the exercise and the commencement of the counting period an interval due to the difficulty in locating and counting the rapidly beating pulse. It was also subsequently discovered that some of the students at the end of the lecture had run upstairs to their own quarters and down again before the test was taken. Moreover no precautions were taken to keep the room free from noise and other external disturbances during the test

In the second series of observations the procedure, was improved; the subjects came straight from the lecture room into the gymnasium and the resting pulse was counted on the subjects in the sitting position after a preliminary period of rest for about ten minutes The pulse counting in this series was done by a medical student with clinical experience The same method was used in the subsequent determinations of the pulse rate and the interval between the completion of the second pull and the time when pulse counting began was determined Precautions were taken to exclude noise and other external disturbances from the room The technique was, therefore, distinctly better in the second than in the first series

The subjects were weighed and measured naked either shortly before or shortly after the exercise tests

RESULTS

The first series of measurements was taken in December, 1934, February, 1935, and June, 1935 In all, measurements were available for 44 men, half of whom were present at each of the three dates, 19 were present twice, and 3 once only The persons included at each date were therefore largely, but not entirely, the same The second series of measurements was taken on a different batch of 29 students in December, 1935, and in June, 1936, the same students being tested at each date

In the 1935–36 observations the interval between the end of the exercise and of the first 15 second period of counting varied from 19 to 28 seconds in December, and from 17 to 20 seconds in June In the December observations two of these intervals were over 25 seconds, in the June observations four were over 20 seconds These six sets of observations were rejected on account of this relatively long interval, the intervals in the remainder ranged from 19 to 25 in December (average 22) and from 17 to 20 in June (average 18) Deducting the first pulse counting period of 15 seconds, the average interval between the end of the pull and the beginning of counting was, therefore, 7 seconds in December and 3 seconds in June

Cotton and Dill (1935) found that the pulse rate in healthy men did not alter during the first 10 seconds after exercise but that during the next 10 seconds the rate fell by about 6 per cent compared with that immediately before the end of the exercise It is, therefore, reasonable to assume that the pulse rates at the 0–15 seconds interval in our second series were approximately the same as the immediate post exercise rates

The average measurements of the men and their variability at each test are shown in Table I The members of the second group were on the average rather shorter and lighter than the first and their strength of pull was rather less The differences are, however, not very large, and the amount of variability round these averages did not differ materially The resting pulse rate is clearly a fairly variable characteristic, as has been shown on much more extensive material—e g, Cripps (1924) Pull – weight, as the coefficients of variation show, is a more variable characteristic than weight alone, and about as variable as pull alone In these small highly selected groups we found no correlation between the resting pulse rate and height or weight, so that the heart rate appeared to be independent of physique The resting pulse rate and the strength of pull also showed no relationship to one another Between weight and strength of pull there was a small positive correlation.

TABLE I

Average and Variability of Measurements

Date	No of observations	—	Height (in)	Weight (lb)	Resting pulse rate (per min)	Strength of pull (lb)	Pull – weight.
Dec, 1934	34	Mean	68 5	152·0	76 6	376 2	2 5
		S D *	1 8	13 1	9 8	47 7	0 3
		C of V †	2 6	8 6	12 9	12 7	11 3
Feb 1935	35	Mean	68 5	153 6	75 5	379 3	2 5
		S D	1 8	11 5	11 0	43 7	0 3
		C of V	2 7	7 5	14 6	11 5	11 7
June 1935	38	Mean	68 7	153 7	79 3	366 6	2 4
		S D	1 9	11 9	9 3	45·0	0 3
		C of V	2 8	7 7	11 7	12 3	12 5
Dec. 1935	29	Mean	67 9	148 2	78 4	335 5	2 3
		S D	2 5	12 8	8·0	49·0	0 3
		C of V	3 6	8 7	10 2	14 6	13 2
June 1936	29	Mean	68 3	150 3	72 8	321 7	2 2
		S D	2 4	12 7	7 6	41 4	0 2
		C of V	3 6	8 4	10 5	12 9	11 1

* Standard deviation

† Coefficient of variation These were calculated from the means and standard deviations to two decimal places

The unweighted average of the coefficients in our five series was 0 34, which is rather less than the figure (about 0 5) reached by Cathcart (Cathcart and others 1935) in his extensive observations of employed and unemployed men and students Between height and pull the average of our coefficients is 0 17 compared with Cathcart's figure of about 0 3 for males of the same age

Table II shows the average reaction to exercise In these groups there is no correlation between the initial pulse rate and its immediate reaction to

TABLE II—MEAN PULSE RATE AT DIFFERENT POINTS OF TIME

Initial pulse rate		No of observations	Seconds after pull					Differences between initial and later rates				
Group	Mean		0–15	15–30	30–45	45–60	60–75 *	0–15	15–30	30–45	45–60	60–75 *
1ST SERIES												
Below 70	63 5	23	80 6	77 3	71·0	66·0	63 5	+17 1	+13 8	+7 5	+2 5	0·0
70–79	74 7	38	93 1	88 2	84·0	80 3	78·0	+18 4	+13 5	+9 3	+5 6	+3 3
80–89	82 4	42	101 0	96 5	89 7	87 6	84 5	+18 6	+14 1	+7 3	+5 2	+2 1
90 and above	95 5	14	112 4	108 8	101 9	94 8	91 5	+16 9	+13 3	+6 4	–0 7	–1·0
Total	77 7	117	95 8	91 5	85 6	81 8	79 4	+18 1	+13 8	+7 9	+4 1	+1 7
2ND SERIES												
Below 70	65 2	12	87 3	72 7	69·0	66 2	63 7	+22 1	+ 7 5	+3 8	+1·0	–1 5
70–79	73 8	25	94 2	80 4	75 9	72 8	72 6	+20 4	+ 6 6	+2 1	–1·0	–1 2
80–89	82 8	11	99 6	88 4	85 8	82·0	81 1	+16 8	+ 5 6	+3·0	–0 8	–1 7
90 and above	94 5	4	115·0	106·0	101 0	97·0	94·0	+20 5	+11 5	+6 5	+2 5	–0 5
Total	75 3	52	95 4	82 3	78 3	75 1	74 0	+20 1	+ 7·0	+3·0	–0 2	–1 3

In the first set there were 4 observations between 50 and 59 and 2 between 100 and 105 In the second set there were no observations outside the groups 60–69 and 90–99 The number of observations in the first set exceeds those in the previous table because individuals are included for whom heights &c were missing

* Figures relating to subsequent intervals have been excluded for brevity

exercise In the first series the average rise is from 17 to nearly 19 beats per minute in the second it is about 20 If the initial rate is correlated with the absolute rise in the first 15 seconds after exercise the coefficient is nil in the first series and minus 0 22 in the second (with a standard error of 0 14) There is, therefore, no sound evidence of association between the two variables Equality in the absolute change implies however that *relatively* individuals with a slow pulse-rate tend to show a greater change from their initial level than those with a fast pulse rate

The average levels at 0–15 seconds after exercise expressed as percentages of the average initial rates are in the first series 127 for initial rates below 70 125 for initial rates 70–79 123 for initial rates 80–89 and 118 for initial rates 90 or above The corresponding percentages in the second series are 134 128 120 and 122 (the final percentage is based on only 4 observations)

The variation in reaction to exercise is considerable even in our highly selected sample of fit men (see Table III). In both series rather more than a third of the subjects showed an increase in the pulse-rate of between 15 and 25 beats per minute, rather more than a fifth between 25 and 35 beats and about 6 per cent. an increase of over 35 beats The two series differ considerably in the numbers showing a relatively small reaction perhaps because the technique in the first series of observations was not so good as in the second

Table II shows that there has been, on the average, a return to very nearly the initial resting rate at the end of one minute in the *first series and at the end of* three quarters of a minute in the second series. It may be that the difference is due to the fact that the pulse was taken sitting in the second series and standing in the first After the first minute the average rate remained close to the initial rate. In both series the individuals with an initial pulse-rate of 90 or over fell to an average figure a little below that high initial rate Possibly these initial rates were raised above the real resting rates by emotional excitement and as this passed off the pulse slowed down.

TABLE III

Variability in Reaction to Exercise

Absolute difference between resting pulse-rate and rate at 0–15 secs after exercise (beats per min.)	No of observations in each different group	
	1st Series	2nd Series.
− 5–	17 (14 5)	1 (1 9)
+ 5–	26 (22 2)	17 (32 7)
+15–	4 (35 0)	19 (36 5)
+25–	25 (21 4)	12 (23 1)
+35–	6 (5 1)	3 (5 8)
+45–51	1 (0 9)	— —
Total	117 (100·0)	52 (100·0)

Percentages in parentheses.

Although the return to the initial rate is rapid on the average this result is not found in all individuals Table IV shows that the variation is considerable Moreover there is a difference between the two series considerably more of the second series return rapidly to uniformity Comparison of the reaction of the same individual at different tests also showed that in the first but not in the second series of observations there were sometimes very large differences in reaction Thus, in subject No 19 1st series the rate was 20 beats per minute below the resting value at the 60–75 seconds interval in December 1934 and 4 beats per minute above it in June 1935 the resting value being the same 80 per minute at each test In the 2nd series the widest differences at this interval in the same subject were for No 14 3 beats below the resting value of 70 in December 1935 and 9 above the resting value of 69 in June 1936

TABLE IV

Absolute difference between resting rate and rate at different times after exercise.	Frequency with which difference was observed at different times after exercise			
	15–30	30–45	45–60	60–75
1ST SERIES.				
−20 or over −20	—	—	2 (1 7)	2 (1 7)
−19 to −15	—	2 (1 7)	2 (1 7)	2 (1 7)
−14 to −10	—	2 (1 7)	2 (1 7)	4 (3 4)
− 9 to − 5	—	5 (4 3)	10 (8 5)	14 (12·0)
− 4 to + 4	20 (17 1)	44 (37·6)	54 (46·2)	66 (56 4)
+ 5 to + 9	29 (24 8)	20 (17 1)	10 (10·2)	8 (6 8)
+10 to +14	20 (17 1)	19 (16·2)	7 (6·0)	7 (6·0)
+15 to +19	14 (12·0)	4 (3·4)	10 (8 5)	7 (6·0)
+20 or over +20	34 (29·0)	21 (17·9)	11 (9 4)	7 (6·0)
Total	117 (100·0)	117 (99 9)	117 (99 9)	117 (100·0)
2ND SERIES.				
−14 to −10	1 (1 9)	1 (1·9)	2 (3 8)	—
− 9 to − 5	2 (3 8)	4 (7 7)	6 (11 5)	7 (13 5)
− 4 to + 4	15 (28 9)	28 (53 8)	36 (69 2)	41 (78 8)
+ 5 to + 9	13 (25·0)	10 (19 2)	5 (9·6)	3 (5 8)
+10 to +14	14 (26 9)	5 (9·6)	3 (5 8)	1 (1 9)
+15 to +19	5 (9·6)	4 (7 7)	—	—
+20 or over +20	2 (3 8)	—	—	—
Total	52 (99·9)	52 (99 9)	52 (99·9)	52 (100·0)

Figures relating to subsequent intervals have been excluded for brevity

Figures in parentheses are percentages

The figures of the second set are doubtless the more reliable, and attention may be confined to them They show that if return to the initial rate within 60 seconds is to be considered normal the term normal in these physically fit young men must be taken to include an increase (or decrease) in the pulse-rate of as much as 10–14 beats per minute. At 60–75 seconds after exercise there was only one individual whose rate was enhanced by as much 10–14 beats, but 3 minutes after the pull there were 3 persons with rates 10–20 beats above their initial rates

Taking minus 4 to plus 4 as a negligible difference from the initial rate 28·9 per cent reached this level in the 15–30 seconds interval just over half at 30–45 seconds just over two thirds at 45–60 seconds just over three quarters at 60–75 seconds and about 90 per cent after 2 *minutes*

The distribution then widens again but the cause is not evident

Regarding the practical value of the response of the pulse rate to exercise we think that these results do not suggest that the immediate reaction is very informative, since even with such a very select group of physically fit young men large variations occur The return of the pulse rate to normal appears to be a more suitable criterion but as comparison between our first and second series shows the tests would need to be done with great care if results of any value are to be obtained and the definition of normal must be somewhat liberal. It is questionable whether the required degree of accuracy in technique could be obtained in school clinics and as the test is time consuming it could probably not be generally adopted.

SUMMARY

The pulse-rates of 73 athletic young men aged 21–26 of excellent health and physique were determined every 15 seconds continuously for 5 minutes after performing two maximum pulls on a dynamometer, these rates were compared with the corresponding pre exercise resting rates There was no correlation between the resting pulse rate and the height, weight, or strength of pull, so that within the population studied the pulse rate was independent of physique and of muscular strength In this select group only a very small degree of correlation was observed between height, weight, and strength of pull, rather less than has been noted in more numerous but less homogeneous populations

No correlation was apparent between the initial resting pulse rate and its immediate reaction to exercise, the absolute rise in the rate being approximately the same in individuals with slow, medium, and fast resting rates, as a corollary the percentage increase in the pulse rate was slightly greater in individuals with a slow resting pulse than in those with a fast rate The variation in reaction to exercise was considerable, even in such a physically select group

In our second and more reliable series of observations, the pulse rate returned to approximately the pre exercise rate in from 45–60 seconds in the majority of the subjects, but some exceptions were noted The return of the pulse to normal within this length of time was the most constant feature of the response to exercise Even accepting this as a criterion of sound physical condition (and we have no unfit persons as a standard of comparison) it is doubtful whether the test could be successfully employed in the routine examination of school-children Our results indicate that it requires considerable care and much time in its application

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FLUORESCENCE MICROSCOPY ON LIVING VIRUS WITH OBLIQUE INCIDENT ILLUMINATION

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In fluorescence microscopy two methods of illuminating the object are available, firstly, by means of a suitable substage condenser and, secondly, by oblique incident illumination

With regard to the first, the general method in use is to employ a high power arc with suitable filters and a quartz illuminating system Barnard and Welch (1936), however, have shown that by employing a condensed spark between magnesium electrodes in conjunction with a dispersing system and a dark ground condenser specially constructed for ultra violet microscopy, the object can be illuminated by ultra violet radiations, this has proved useful for the study of primary fluorescence of various bacteria Hagemann (1937), using the arc as a light source and filters passing an ultra violet band with a maximum of 3660 A u, was able to demonstrate that various organisms had a great affinity for fluorescent dyes In thin dried smears of virus infected tissue, stained with Primuline, he has seen very minute fluorescing bodies which, on account of their shape and grouping, he regards as virus elementary bodies *

The second method, in which oblique incident ultra violet illumination is employed, was used for the present investigations The optical equipment consists of an arc, a Leitz Ultropak outfit, and a collecting lens made wholly of crown glass which, with suitable filters, allows ultra violet light ranging roughly from 3500 to 4000 A u to pass It has thus been possible to demonstrate, by fluorescence, the elementary bodies of living viruses in the cells of living, infected tissue

A NEW TECHNIQUE

For the observation of living virus growing on the chorio allantoic membrane of the developing chick or duck embryo, a method has been developed in which the membrane is brought into immersion contact with the under side of a cover slip without any interference with its normal anatomical connexions Observations can therefore be made through this cover slip with visual oblique incident illumination, or with ultra violet light by the outfit mentioned above

Using visual light on membranes infected with infectious ectromelia virus, the presence of inclusion bodies composed of elementary bodies can be observed in various developmental stages within cells The arrangement of these infected cells and their relation to the capillaries allow inferences to be drawn as to the mode of infection and the manner of spread of the virus Membranes infected with a dermal strain of vaccinia virus show from the second day onwards numerous vibrating particles within the cytoplasm of the cells The particles may be either arranged in clumps or distributed throughout the whole of the cytoplasm

To obtain differentiation of structure in the infected membrane by means of fluorescence microscopy, primuline as used by Hagemann and Titan yellow 2 GS (a diazoamino compound of primuline), which in solution and in the present application fluoresces with greater brilliancy, were employed. These dyes in solution fluoresce in colours varying from violet to orange according as the concentration of the dyes increases With the fluorescence resulting from high concentrations these colours are very impure, the wave lengths emitted in each colour covering a broad range of the spectrum.

When the dyes are applied to infected membranes they are taken up by various structures in such a way as to produce an image of high colour contrast, due either to the varying concentration of the dye as a whole or to a selective affinity to one or other constituent of the dye which, in the case of Titan yellow, is a mixed diazo compound of dehydrothio *p* toluidine sulphonic acid It is noticeable that the green is missing and that with most structures the colours exhibited appear to be purer than the colours emitted by the solutions alone

If egg membranes with ectromelia lesions are treated with dye and then examined with oblique incident ultra violet light a fluorescent picture with sharp contrasts is seen The inclusion bodies appear as mauve structures within pale blue cells against a violet background consisting of normal structures which, with few exceptions, have not taken up the dye Some large intracellular granules and the nuclei of some of the infected cells, leucocytes, red blood corpuscles and mononuclear cells (? histiocytes) appear in colours varying between bright orange and brownish-orange.

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* See *Lancet* July 10th 1937, p 91

On further examination of the inclusion bodies with the highest N A objectives (Ultropak) available the elementary bodies can be detected as bright blue particles on a mauve background representing the matrix. The mauve colour is probably due to the combination of light emitted from out-of focus granules together with that from the matrix This is suggested by the fact that by focusing into lower planes the inclusion bodies appear more bluish in colour whilst the granularity disappears owing to loss of contrast

On the application of dye to vaccinal lesions it is found that as in the case of ectromelia, cell structures in relation to the above mentioned vibrating particles can be differentiated. A similar affinity for the dye is shown by these particles which also appear as light blue granules against a mauve background. In dead cells where the vibration has ceased their presence is indicated by light blue areas and the nuclei appear as orange brown structures.

There is little doubt that these granules are true virus elementary bodies and that they correspond to Paschen's elementary bodies Their vibratory behaviour not noticeable before the second day of infection suggests a developmental phase following a stationary one as in the case of psittacosis (Bedson and Bland 1932 Bland and Canti 1935)

I am indebted to Mr J Smiles for his constant help particularly in the development of the optical system.

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BRITISH MEDICAL ASSOCIATION

SECTION OF SURGERY

Prof. P T CRYMBLE, the president was in the chair at a meeting of this session when a discussion on

Obstructions of the Common Bile duct

was opened by Prof E R FLINT (Leeds) He said that obstructions of the common bile duct may be partial or complete with jaundice, but that jaundice does not necessarily imply common duct obstruction Partial obstruction on the other hand may give rise to no ordinary clinical signs but only to an increase in the plasma bilirubin which can be detected by the van den Bergh test This obstruction might be either intra or extrahepatic Prof Flint considered that the more common are stone and its complications, pressure on duct from without by simple or malignant pancreatic lesions, spasm of the sphincter of Oddi. The problem of diagnosis was not great stone in the common duct carcinoma of the head of the pancreas and chronic pancreatitis each having their distinctive features. In atypical cases any one of the clinical signs or symptoms might be interchanged between the diseases, making the diagnosis difficult It was difficult also to determine whether the origin of jaundice was intra or extrahepatic mechanical obstruction and cholangitis could produce similar liver changes. A painless jaundice with bile in the duodenum suggested an intrahepatic lesion such a jaundice was distinctly yellow and without much itching The marked retention of tetra-iodophenophthalein injected suggests an intrahepatic lesion It seemed inevitable that if operation was suggested for all cases of suspected obstructive jaundice some unnecessary operations would be performed On the other hand some patients would be relieved by the finding of a stone where malignant disease had been suspected. Of pancreatic obstructions to the duct 20 per cent would prove to be simple The effect of obstruction was to produce dilatation of the duct; it became bluish and the bile in it is dark and inspissated in obstructions from without In stone the duct was thick, pinkish yellow and contained thin yellow or muddy fæcal-odoured bile In 5 per cent of cases there would be found white bile, the signal of a serious hepatic injury In the liver the injury would vary from mild central necrosis to acute atrophy the best guide to serious damage was the serum bilirubin. Patients with lesions of the liver tended to have a prolonged coagulation time and to bleed. The blood urea rose bile salts disappeared from the blood and urine casts and albumin appeared in the urine and the patient vomited altered blood. Ascites and splenic enlargement might result from the fibrosis, and a stone in the ampulla might cause back pressure on the pancreas with all its effects Work done at the Mayo Clinic had shown the presence of anæmia and anoxæmia of the stagnant type with an effect on metabolism which might well be the reason for the success of glucose therapy

Operation should be carried out in these patients in one to two weeks from the onset of symptoms this gave ample time for the essential pre-operative preparation which consisted in providing water salt, sugar and blood to rectify as far as possible the disturbances produced by the disease. Water salt and sugar would be given by the intravenous drip method The water balance must be watched and if necessary a blood transfusion given to provide protein. Apart from this the benefits of a blood transfusion were to raise the peripheral blood pressure diminish post-operative bleeding replace lost blood and raise the hæmoglobin content, and therefore the oxygen-carrying power of the blood. The transfusion was best given by the drip method Calcium was useful as apart from its effect on bleeding it had a beneficial action on the liver In operating the best practice was to do as little as possible; the duct should be decompressed slowly with a syringe and needle cleaned, and after dilatation of the ampulla drained externally with a T tube. The common duct should be opened if the duct is dilated altered in colour thickened or if the pancreas is hard or gritty Prof. Flint said that the anæsthetic of choice is spinal the fall in blood pressure being countered by Icarol and sufficient gas and oxygen to keep the breathing fairly deep Spinal anæsthesia gives complete relaxation and has no toxic action on the liver or kidneys Post-operative treatment should be on the lines of pre operation routine After the operation 10 per cent CO_2 in oxygen should be given until the patient takes 4 or 5 deep breaths, every quarter of an hour for 24 hours The results in operations carried out using this technique have shown in Prof Flint's experience a mortality of 4 7 per cent. in 84 cases of stone in the common duct.

Mr HOWARD STEVENSON (Belfast) endorsed many of Prof Flint's remarks He emphasised particularly external drainage of the common duct and dilatation of the ampulla by weighted gum elastic probes in preference to metal sounds

Mr G GORDON TAYLOR (London) declared himself in complete agreement with the opening remarks He deplored the growing tendency to explore the common duct as a supplement to cholecystectomy, alleging that it is performed in 40 per cent of cases of this kind He favoured the external method of drainage with T tube He spoke of the bacteriology of the bile mud, the Welch bacillus was the cause of death in 2 cases known to him He advocated the use of Cylotropin and pre operative irradiation of the splenic area to diminish bleeding in these cases In conclusion he expressed the feeling that more courage was required in treating malignant disease of the common duct regions

Prof A H BURGESS (Manchester) endorsed Mr Gordon Taylor's view that choledochotomy was too frequently performed In a normal pancreas the common bile duct, he said, is easily palpable in its whole extent Spinal anæsthesia seemed, he thought, to be followed too frequently by chest complications to be recommended in these cases

Mr N C LAKE (London) strongly favoured spinal anæsthesia, complications could be prevented by the use of CO_2 as described by Prof Flint He said the discussion had prompted him to the view that the gall bladder might be the focus of infection in some cases of arthritis

Prof C F M SAINT (Capetown) said he found Murphy's button useful in cholecystenterostomy in promoting hæmostasis

The PRESIDENT described a case of obstruction of the ampulla due to an adenoma in which local excision gave a good result

Short Papers

Prof L R BRAITHWAITE spoke of some points in *Duodenal Regurgitation* He said that 80 per cent of the regurgitant fluid into the stomach was pan creatic juice, a much more constant constituent than bile, which was sometimes even absent The action of bile on the stomach is threefold it slows gastric peristalsis, lowers the gastric acidity, and arrests peptic digestion It was therefore a "rest factor" for the stomach, and as such one would think it should be beneficial in duodenal ulcer The opera tion of cholecystgastrostomy might therefore be of benefit in cases of duodenal ulcer without stenosis This operation did not replace the natural regurgita tion as it did not ensure the flow of pancreatic juice into the stomach, to ensure this one would have to close the duodenum at the duodenojejunal junction and do a gastro enterostomy This operation had not yet been performed, but cholecystgastrostomy enjoyed success up to a point It relieved the duo denal symptoms entirely, but they unfortunately recurred in between 18 months and 2 years

Mr A K HENRY (London) in speaking of *Burns* preferred the dry tannic acid method of treatment Its drawback, he said, was that sepsis was liable to occur at the edges of the hardening crust, this liability he had greatly diminished by painting the skin edges and the patients' fingers with 1 per cent brilliant green in absolute alcohol daily As to shock one hour's delay only was permissible before insti tuting tannic acid treatment, a longer wait only made the shock more profound From the fourth to the tenth day toxæmia was a danger Gastric acidity was very high, occult blood was present, and hista mine in the blood was four times as great as normal He suggested very large doses of alkali to counteract this

Mr J G YATES BELL (London) described the *Steinach operation for the relief of prostatic symptoms* He said that the operation produced its effect by a vasomotor reflex from pressure on the ganglion, and also later by affecting the hormone secretion of the testes In 28 cases, 7 of which were excluded as they had other minor operations performed as well, he had 12 successes and 4 failures, the rest being doubtful The indications for this operation were early cases with few symptoms, early cases with residual urine under 4 oz, cases complicated by vesical calculus The contra indications were poor kidney function and atrophic testes

Prof E W ARCHIBALD (Montreal) maintained that *spasm of the sphincter of Oddi* was responsible for some cases of obscure epigastric pain and attributed it to an imbalance of the parasympathetic system Clinically there are three types of case (1) those who have pain sometimes vague in nature following cholecystectomy, (2) cases of recurring pancreatic œdema and pancreatitis, (3) cases of cholangitis. At operation bile sand and slush was found in the common duct The operation of cutting the sphincter was performed through an incision in the duodenum, a special guide having been previously passed down the common duct According to Prof. Archibald the sphincter does not regenerate

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SECTION OF OBSTETRICS AND GYNÆCOLOGY

Prof C G LOWRY (Belfast), the president, took the chair at a meeting of this section when a paper on the clinical value of

Prontosil and Similar Compounds in the Treatment of Puerperal Infections

was read by Mr G F GIBBERD (London) His cases were those admitted to the isolation block of Queen Charlotte's Hospital in 1936–37, and he compared their progress with that of similar cases admitted in 1934–35 Prontosil and Streptocide (sulphanilamide) had both been used since the beginning of 1936 Prontosil had been given intramuscularly in doses of 0 5 to 1 5 gramme or 20–60 c cm and orally in doses of 2–4 g or 6–12 tablets daily Maximum doses had been given to severely ill patients, and a few had developed cyanosis, but the treatment had been continued without untoward effect Analysis showed that the gross mortality in the 1934–35 group was 20 per cent, whereas in the 1936–37 group it was only 4 5 The virulence of the hæmolytic streptococcus depended on its invasiveness, and it should be noted that the infection was limited to the birth canal in 47 per cent of the 1934–35 cases, and in 66 per cent of the 1936–37 cases The difference must have been due either to diminished virulence in the streptococcus during 1936–37, or to the new treatment given The mortality rate in proven septicæmia (excluding general peritonitis) was 40 per cent in patients who did not receive the new drugs and 20 per cent in those who did The incidence of septicæmia before admission did not greatly differ in the two groups, and this was evidence that there was no considerable difference in the invasiveness or virulence of the prevalent streptococcus in the two periods In non fatal cases where an actual inflammatory mass had been demon strated outside the limits of the birth canal, the illness had been decidedly shortened since the use of prontosil, and Mr Gibberd regarded this the most convincing piece of direct evidence that it was beneficial The improvement in the mortality rate was associated with a decrease in the invasion of tissues rather than with a greater tendency to resolution of the disease once widespread invasion of tissues had occurred There was every reason to continue to employ the new remedies until their value or otherwise was more firmly established

Miss D B Brown (Belfast) analysed 30 cases treated in the isolation block at Belfast In 10 cases of local infection, 8 of which were very serious prontosil had been definitely beneficial Of 7 patients with septicæmia 2 had died, and these might have been inadequately treated One had previously had a nephrectomy for renal tuberculosis and the other had had a mixed infection When necessary large doses had been given one patient having received 180·4 g in 30 days and another 186 g in 31 days Cyanosis had appeared in 2 cases of septicæmia, but it seemed to bear no relation to the amount of the drug given Prontosil apparently had a definite value in preventing abscess formation when given in cases of acute mastitis

Mr L Carnac Rivett (London) wished to emphasise certain points in Mr Gibberd s figures He had grouped together the serious cases of septicæmia and peritonitis yearly from 1932 and was able to demonstrate a sudden drop from an average mortality of 71 per cent to one of 27 3 per cent since the use of prontosil He showed temperature charts of severe cases with a fall in temperature in 2–5 days. He drew attention to the possibilities of prontosil used locally

Prof H J Drew Smythe (Bristol) had had a year s experience of prontosil Of 23 cases of puerperal infection, mostly mild roughly half had received prontosil and the mortality had been about the same as in those treated without it He had been impressed however by the increased rapidity of cure in cases that had received prontosil. Sulphæmoglobinæmia had caused him no real anxiety and always cleared up on ceasing to give the drug the important warning signs of this complication were headaches and loss of appetite He considered that drugs of the sulphanilamide group were not bactericidal but rendered bacteria more vulnerable to attack by leucocytes or else stimulated the leucocytes in some way

Dr Bethel Solomons (Dublin) hoped that the marvellous effects of prontosil would not give the practitioner of midwifery a false sense of security Prevention of sepsis was what mattered most, and this could only be obtained by a thorough knowledge of obstetrics acquired from skilled teachers

Prof J Chassar Moir (Oxford) said there were possible dangers in prontosil administration which had not been mentioned such as interference with hæmopoiesis. Its routine prophylactic use was unwise Prontosil was effective in pyelitis of pregnancy and in most cases the urine could be rendered sterile in five days

Dr A. Sherwin (Melbourne) asked if prontosil would be likely to help in cases of *Bacillus welchii* infection.

Mr Gibberd, in reply said a few cases of *B welchii* infection were admitted to Queen Charlotte s but the vast majority of puerperal infections were due to hæmolytic streptococci As regards the mode of action he thought that sulphanilamide was liberated in the blood stream and acted as a bactericide Methæmoglobinæmia was caused by prontosil and not by magnesium sulphate In the presence of magnesium sulphate methæmoglobin was changed to sulphæmoglobin and this took much longer to eliminate—a state of affairs that might be serious where there was anæmia The results of prontosil therapy were surprisingly good but he must maintain his doubt whether a decrease in virulence in the streptococcus might not partly account for them.

Abortion

Mr P Malpas (Liverpool) had calculated that about once in 100 pregnancies a woman was encountered who had had three or more abortions these being attributable to recurring causes rather than accidental or random ones Cases showing recurrent abortions were allied in some way with those of recurring stillbirths and toxæmias of pregnancy with accidental hæmorrhage He had studied 115 fraternities containing recurrent abortions and stillbirths with regard to abnormalities he had found either lesions of the developing embryo or chronic maternal disease in 65 cases but no demonstrable abnormal condition in the other 50 There appeared to be a recognisable ætiological factor in roughly half the cases He mentioned two cases in which a woman had had a successful pregnancy by one husband but a series of abortions by another thus suggesting a possible cause in the male partner As regards treatment though the experimental evidence was in favour of wheat-germ oil it was certain that vitamin E deficiency was not a constant factor in recurrent abortion. Vitamin C was important in maintaining the viability of embryos He regarded treatment with corpus luteum hormone (progestin) as the most effective remedy but more clinical data were needed Arsenic had been found helpful given as novarsenobillon, in non-syphilitic cases Further knowledge of the ordinary metabolism of the early human embryo was necessary; it died either from maldevelopment or interference with early nutrition.

Mr H C Hardy Greer (Belfast) said he found the corpus luteum preparation Proluton most helpful in cases of recurrent abortion and he was encouraged to persist in its use

Prof. T D O'Donel Browne (Dublin) said that contrary to what is generally taught, the proportion of abortions due to syphilis is small. In cases of actual bleeding an adequate dose of proluton would stop the hæmorrhage if given before the ovum was dead.

Dame Louise McIlroy (London) said that though abortions were not often due to syphilis stillbirths often were She treated cases of repeated abortion with a daily oral dose of corpus luteum and thyroid extract She had had success in two cases of repeated abortions by using wheat-germ oil. Death of the ovum was due to some complicated metabolic cause

Dr J J Holland (Perth, W Australia) said that in breeding animals it was found that a healthy female might always abort to a certain male The paternal factor in human cases should be further investigated

Hysterosalpingography

Mr V B Green Armytage (London) spoke on the obstetrical and gynæcological importance of hysterosalpingography and its advantages over simple insufflation Insufflation did not provide information about both tubes or about the site of tubal occlusion or other abnormalities in the Müllerian tract and treatment and prognosis depended on accurate knowledge An important question arose as to the condition of the tubes after peritonitis due to appendicitis either before or after marriage and after an extra uterine pregnancy when the extravasated blood might have blocked both tubes The state of the tubes after salpingitis due to any cause should be investigated if the patient wished to know about the possibilities of pregnancy Salpingography could not lie and he had had no regrettable results In a series of 300 cases of sterility he had found that in 40 per cent. blocked tubes were responsible The injection of up to 20 c cm of Lipiodol was done in the consulting room and no anæsthetic was given. It was important that the lipiodol should be at body temperature The patient was radiographed ten minutes afterwards and walked out If Mr Green Armytage found the fimbrial end blocked he operated and pregnancy had followed in 20 per cent. of his cases. If the block was at the cornu it was worth implanting the tubes in the uterine wall. He always did a salpingography after operation to prove the patency of the tubes; the psychological effect for a woman of knowing there was no reason why she should not become pregnant was very important.

Dr. SOLOMONS said he agreed with Mr. Green-Armytage's views. He himself used Ethytol and had had no accidents except mild irritation of the peritoneum in one case. He always took a second radiogram ten minutes after the first, by which time any apparent blockage due to spasm would have disappeared.

Prof. CHASSAR MOIR asked whether there had been any untoward symptoms. He thought he had seen what looked like the shadow of lipiodol in the pelvic veins in one of the radiograms shown by Mr. Green Armytage.

The PRESIDENT said he had occasionally seen collapse after the injection of lipiodol. He regarded acute appendicitis as an important cause of sterility.

Mr. GREEN ARMYTAGE, in reply, said he thought the type of instrument with apertures at the sides might cause collapse from sudden distension of the cervical canal. He used one with a distal aperture. In over 800 salpingographies he had given an anæsthetic (Evipan) only twice. He performed it 5–7 days after a period. The patient, being conscious, could complain of any pain felt, and this might be helpful. The pain was never acute, and there had been no case of oil or air embolism.

SECTION OF DISEASES OF CHILDREN

AT a meeting of this section, with Dr. H. MORLEY FLETCHER (London) in the chair, a discussion on

Enuresis

was opened by Dr. ROBERT HUTCHISON (London), who said that this condition, as Bacon said of medicine in general, is "a subject which has been much laboured but little advanced," for we are still very ignorant of its causes and mechanism and largely helpless in its treatment. He limited enuresis to bed wetting and did not regard it as pathological until the age of three. The functional characteristics are important although he maintained that the children show no recognisable psychoneurotic peculiarities and generally come from normal homes. He dismissed high acidity of the urine, phimosis, threadworms, enlarged tonsils, and adenoids as contributory causes, although he agreed that removal of the adenoids might be the deciding factor in terminating the condition. He called attention to the group of cases with nocturnal polyuria and wondered whether they were due to a functional disability of the kidney or to a vasomotor instability. Enuresis usually disappeared before puberty although it might persist much later. He summed up the essentials of prognosis in the words of a French writer; the enuretic is "socially dead." Dr. Hutchison's advice on treatment followed classical lines as to general management; sphagnum moss or a rubber urinal counteracted unpleasant effects. Belladonna has fallen into wrongful disuse, as it improved the condition clinically, although its mechanism was not understood. Ergot, ephedrine, pituitary extract, and other endocrines had proved of little help. The passing of sounds has no justification. There remained psychotherapeutic methods; suggestion and hypnotism might prove useful in certain cases, but more severe practices, such as Freudian analysis, were disproportionate to the object.

Dr. S. GRAHAM (Glasgow) emphasised the importance of excluding organic disease, notably pyuria, chronic interstitial nephritis, diabetes mellitus, and diabetes insipidus. The evidence that spina bifida, calculi, acidity, phosphaturia, and phimosis lead to bed wetting was not substantial. There was no typical mental make-up among enuretics, and their sleep characteristics varied, although the wetting usually took place soon after sleep began. Psychological treatment held out the greatest hope and should produce an increasing number of cures.

Dr. R. MARSHALL (Belfast) asked what caused the persistent occasional enuresis in a boy when he goes away from home, in contrast to the effect on the average enuretic of admission to hospital; and whether there was any recognised connexion between this type of enuresis and epilepsy. In his opinion enuresis was connected with two types of bad mother: (1) too fussy, (2) too careless.

The PRESIDENT did not agree with Dr. Hutchison's age limit, holding that control of the bladder should be established before three years of age. He advocated inquiry into the day habits of an enuretic; should frequency be a factor the child should be taught to hold urine in the bladder for gradually increasing periods of time, up to three hours. If this training was done well, the night habits would also improve. He mentioned the onset of enuresis in adolescence which he attributed to development of puberty, and also called attention to enuresis following severe measles and typhoid. Belladonna was the only useful drug, but must be used in sufficient doses.

Dr. E. A. BENNETT (London) outlined the psychological point of view. He asked that the total personality should be taken into account and that the parental relations should be reviewed. These children absorbed "upsets" in the home and then developed enuresis. The child must be taught to take his own responsibilities and should keep a diary, in which he initialed his own reports. Hypnotism was often used but was superficial. Freudian analysis should be reserved for the exceptional child. Adler's methods were preferable and the attitude of the child towards his parents should be changed towards independence. Explanation of dreams might be of use and any method whereby the child was made to see that no guilt was involved but only an emotional state would finally produce the desired cure.

Dr. R. E. STEEN (Dublin) associated himself with Dr. Bennett as regards the "blame factor." He advocated the cutting down of solid food at tea as well as fluids, and belladonna as the most useful drug.

Prof. S. BARLING (Birmingham) also agreed with Dr. Bennett. It was important for the child to take his own responsibility. Close coöperation with the psychotherapeutists was desirable.

Dr. W. R. F. COLLIS (Dublin) asked that a greater interest should be taken in the cause of the condition.

Dr. A. A. MONCRIEFF (London) said that babies nowadays are overtrained and that parental interest in psychology frequently produces untoward effects.

Dr. H. K. MCKERNAN (London) asked what could be done for the child from the poor home who cannot be induced to attend a child guidance clinic.

Dr. T. H. CROZIER (Belfast) agreed that the most difficult cases come from poor homes, and that the parents need treatment as well as the child.

Dr. D. C. R. R. JENKINS (Belfast) described the distress of the boy who suffers from enuresis on entering his public school. The condition frequently disappeared as he gained in importance. He had found the use of a diary and the administration of belladonna gave the best results.

Dr. HUTCHISON, in reply, said that in persistent occasional enuresis a return in an almost cured case might be due to any mental or physical upset. He did not approve of the attempt to produce early dryness and believed that the final issue was thus only evaded. He welcomed Dr Bennett's remarks but did not himself believe that parental disharmony had anything to do with the condition In his opinion exaggerated weight was attached to this factor Psychotherapeutic treatment would stand or fall by its results. There was danger that the use of a diary would lend too much importance to the condition in the child's mind rather should it be realised that if a child is unhappy his bladder may become out of control. Dr Hutchison welcomed Dr Steen's suggestion of cutting down the food intake and agreed with Dr Moncrieff that the modern child has been too much studied.

Prof. **Barling** read a paper on the diagnosis and treatment of

Tuberculous Cervical Adenitis

He pointed out that not only the incidence of this condition but also the severity had diminished during the last thirty years. Clinical experience had shown that this disease caused much ill health but was rarely lethal and it was unusual for generalised tuberculosis to follow Under the age of two years prognosis was more grave and excision should be avoided where possible, except with extensive involvement of the skin. In older children the outlook was better and once the local condition was mastered reassurance might be given as to generalisation. He held that a combination of tuberculous and septic infection both of low grade resulted in an essentially localised lesion In the early stages the condition differed little from simple chronic adenitis but as time progressed matting of the glands made a tuberculous diagnosis more probable Softening of the glands or involvement of the skin made the diagnosis almost certain In the early stages pain might be present but later was absent unless secondary infection or skin involvement occurred. Ætiology included bad environment poor nutrition and local foci of infection in tonsils adenoids teeth or skin Rarely infection resulted from a case of open pulmonary tuberculosis in the household Infected milk more usually produced infection of the thorax or abdomen. Treatment by various physical agents had been increasingly used in the post-war years, and advocates of radium X rays and various forms of light therapy all claimed a high percentage of successes Prof. Barling usually treated the early cases with unbroken skin with a mercury vapour lamp in increasing dosage to achieve complete cure might take a year or more but in most cases resolution might be expected. Especially good results were obtained between the ages of 2 and 10 Among these the younger the patient and the more recent the infection the greater were the advantages of non-operative methods. Cases in adolescence did best with light treatment before operation especially where sinuses were present Light lessened the local œdema and infection in and around the glands and when used after surgery had a favourable effect on missed out lying glands, thus guarding against recurrence Aspiration might suffice for a tiny area, followed by prolonged light treatment but repeated aspiration usually ended in sinus formation and deep sepsis Surgery was indicated for (1) extensive glands breaking down; (2) when glands appear for the first time in adolescence (3) when non operative treatment has been carried out and no further improvement had taken place A high degree of surgical skill was needed for this type of case

Dr **Marshall** raised the question whether the decreased incidence of abdominal tuberculosis had not coincided with that of cervical adenitis

Dr **Hutchison** agreed that infected tonsils were frequently an early cause of this condition and advocated tonsillectomy followed by six weeks at the seaside. Should the glands not disappear then excision should be advised In his opinion light treatment was time-consuming and probably as expensive in the long run as more drastic measures.

Prof. J **Morley** (Manchester) advocated complete excision He deprecated curettage as this predisposed to reinfection of adjacent groups of glands

Prof **Barling** in reply agreed that the pendulum against surgery had swung too far but wished to emphasise the necessity for the best surgical skill.

Dr **Moncrieff** read a paper on the

Use of Thyroid for Premature Babies

He had followed the suggestion of Dr E Pritchard that thyroid might speed up the maturation of premature babies as it had done experimentally in tadpoles It was not given to replace a deficiency He showed charts to illustrate the effect on weight mortality rate and temperature In a controlled experiment the mortality rate in premature babies receiving daily 1/20 grain of thyroid extract per lb body weight was a third that among the untreated babies. A full report on this work would be published in the near future—Dr **Collis** had also found thyroid useful for premature babies

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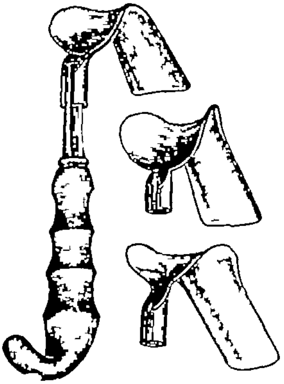
NEW INVENTIONS

AN IMPROVED VAGINAL SPECULUM

The need for an assistant makes many types of speculum inconvenient in general practice besides adding to the risk of infection The self retaining instrument illustrated in the Figure obviates this and because of the absence of all screws and hinges it can be easily cleaned and has a long life It consists of a heavy handle and three blades of different sizes to fit into it The medium-sized blade is the one most generally used but there is no difficulty in changing it in the course of an operation. The weight of the handle is enough to retract the wall of the vagina and for it to be retained as long as desired even in restless patients. The absence of an anterior blade allows the cervix to be freely drawn down and affords a wide view but if needed an additional ordinary speculum may be used in the ordinary way The instrument fits into any steriliser or doctor's bag It has been made for me by the Surgical Manufacturing Co, London W 1



S Jaswonsky M.D

Kovno Lithuania.

REVIEWS AND NOTICES OF BOOKS

Physiological Basis of Medical Practice

By C H BEST, M.A, M.D, D Sc Lond, F R S Canada, F R C P Canada, Professor and Head of Department of Physiology, Associate Director of the Connaught Laboratories, Research Associate in the Banting Best Department of Medical Research, University of Toronto, and N B TAYLOR, M.D, F R S Canada, F R C S Edin, F R C P Canada, Professor of Physiology, University of Toronto London Baillière, Tindall and Cox 1937 Pp 1684. 45s

As the authors of this book point out, there is now a growing conviction that “ morbid physiology ” has been neglected in the past in favour of morbid anatomy, though the neglect has been due to lack of knowledge rather than lack of interest A book by Krehl, published thirty or forty years ago, which ran into several editions (the last appearing in 1916), dealt with the more physiological aspects of pathology, stressing their importance but hampered throughout by a paucity of known facts Those who attempt to day to correlate physiology and medicine are embarrassed by such a wealth of more (or less) scientific information, that protagonists of this research are pleading for a fresh start at the other end, digging back channels to receive and direct the oncoming flood. This book by Best and Taylor is essentially a text-book of physiology which does not stop at a description of the normal, but displays fully the consequences of functional derangement It is large and comprehensive enough to do justice to the scientific method, and the result is impressive After all, the essence of physiological research is not mere observation but experiment, and experiment involves the study of a tissue, organ, or system under artificially controlled conditions It is inevitable that investigation should progress from the isolated tissue to the whole organism, and from the lower animal types to the higher, and that the artificial environment should gradually proceed from the purely physical to the physiological. An artificial physiological environment is a pathological condition, and the modern physiologist finds himself more and more often coming into contact with such conditions It is, of course, impossible and undesirable to lay down any law of progress, many important discoveries have been evolved in precisely the reverse direction, but the paths of the clinical and scientific investigator intersect at a point which is moving steadily and ever more rapidly in one direction It is increasingly important, therefore, that we should periodically be presented with a bird's eye view of the situation, and this has been skilfully provided in this work which is written primarily for students The style is clear, direct, and logical. The seeker after sensation will be disappointed, and also those who delight in subtle argument There is no space in the seventeen hundred pages for anything but the transfer of information from authors to reader, and it is a merit that it has been made readily assimilable

Most of the work is straightforward physiology and biochemistry, as the title suggests, and it is quite up to date There is, however, a commendable absence of tag ends of recently acquired information which would tend to break the continuity of the text Indeed, this might be open to the criticism of being a little dogmatic, if it were not for two features which enormously increase the scope of the book. One is an excellent system of cross references, and the other the list of original papers and monographs which are arranged under chapter headings and occupy the last hundred pages The full titles of these are given and the authors are not always specifically referred to in the text, which is not overburdened with names, and is moreover unrestricted by any obligation in the way of exact quotation The reader is given an interpretation which he can readily understand and can easily check by using the bibliography A brief account of structure is introduced where necessary, and free use is made of small print in describing experimental methods and in presenting the background The keynote of the book is comprehensiveness in relation to the subject as a whole, without the confusion which is apt to result from a mere catalogue of detail

Diseases of the Colon and Rectum

Diagnosis and Non Operative Treatment By GOTTWALD SCHWARZ, M D, Professor, University of Vienna, JACQUES GOLDBERGER, M D, Consulting Physician, Carlsbad, and CHARLES CROCKER, M D London H K Lewis and Co 1937 Pp 540 40s

A professor of radiology and two consulting physicians, working in collaboration, have much of interest to say about diseases of the colon and rectum Nearly 250 of their pages are devoted to diagnosis, including an account of the physiology and movements of the large intestine They describe a new type of “ deplicoptic ” proctosigmoidoscope which has an optical arrangement, something like that of a cystoscope, giving an exceptionally clear and enlarged field of view It is a long instrument (35 cm) and of a diameter no larger than that of the ordinary child's sigmoidoscope (13 5 mm) They claim that it is passed more easily than the usual adult sigmoidoscope, air inflation can be used, but more commonly a continuous stream of warm water keeps the bowel distended and the field clear Certain of the coloured plates (notably V and VI) suggest that the view of a rectosigmoid carcinoma given by this instrument is very different from that to which we are accustomed in the air inflated sigmoidoscopes It seems to us a moot point whether in endoscopy of the rectum and the pelvic colon a greatly magnified view is an advantage to the person with normal vision, and we question also whether water inflation is likely to give a true and easily recognisable picture of the mucous membrane of a viscus which is normally in a relatively dry state Chapter V is devoted to laboratory examination of the fæces, and includes an excellent account of the protozoa which may be found in the stools In Chapter VI we find a full account of diagnosis by X rays, and are introduced to the term “ irrigoscopy ” for the barium enema controlled by fluoroscopy A large series of radiograms illustrate this chapter, and the radiographic appearances of the colon in such conditions as ulcerative colitis, megacolon, diverticulitis, carcinoma, and polyposis are exhaustively discussed General methods of treatment by diet, massage, and hydrotherapy, both external and internal, are described, including various forms of electrical treatment The medical treatment of the large number of diseases of the colon is given in great detail, particularly of the dysenteries and the various forms of colitis, megacolon, and diverticulitis The authors have written helpful sections on diarrhœa, muco-membranous colitis, constipation, and visceroptosis The final short chapter on diseases of the anus and rectum deals with some conditions which scarcely come within the province of a physician such as fissure fistula, and abscess

A few words and phrases are curious for instance, tuberculotic is used as an adjective (p 404) and in the final paragraph of the book we read The application of the enterocleaner in cases of dyschezia In the main the authors have kept very fairly to their medical viewpoint and have indicated the conditions for which surgery is advisable Since the diseases discussed include many such as diverticulitis colitis, and proctitis, which come under the survey of both surgeons and physicians all clinicians will read it with profit

Die Prophylaxe der Schlafstörung

Von Dr med habil. Paul Vogler Dozent an der Universität Berlin Leipzig Georg Thieme. 1937 Pp 130 R M.5 80

This little manual is devoted to non medicinal and non psychological measures for combating insomnia. A brief review of the physiology and the theories of sleep—with a disapproving note about the psycho-analytic theory—precedes a section on prophylaxis in which the influence of bedroom bed bedclothes, and habits upon sound sleep and the importance of diet and sunshine, are elaborated. The duration and periodicity of sleep and other problems such as the possibility of educating a child to have good sleep habits are briefly examined. In the final section on the treatment of insomnia by exactly performed prophylaxis, the only methods described are those of hydrotherapy, a brief passage about drugs and another about psychotherapy serve to emphasise the author s preference for water externally in one form or another The success which he has attained with his nature cure methods and the cases he reports suggest that he has not had much experience of the intractable forms of sleep disturbance sometimes met with in psychiatric practice

1 Aids to the Treatment of Diseases of Children

Seventh edition. By F M. B Allen M.D M.R C P Lond. Lecturer in Infant Hygiene and Diseases of Children Queen s University Belfast Assistant Physician Belfast Hospital for Sick Children. London Baillière, Tindall and Cox 1937 Pp 329 4*s* 6*d*.

2 Synopsis of Pediatrics

Second edition. By John Zahorsky A.B M.D F.A C.P Professor of Pediatrics and Director of the Department of Pediatrics, St. Louis University School of Medicine and Pediatrician in-Chief to the St. Mary's Group of Hospitals. Assisted by T S Zahorsky, B S M.D Instructor in Pediatrics at the School and Assistant Pediatrician to the Group London: Henry Kimpton. 1937 Pp 367 17*s* 6*d*

1 Whatever view may be taken of keys ghosts" and synopses by the fully fledged physician they form an important part of the armamentarium of the average student who still has to break through the shell of his examinations. There must be few indeed who have never used one or other of the famous Aids series of which Dr Allen has supplied one of the more popular volumes. The title is somewhat of a misnomer as the author considers each disease under the headings of ætiology symptoms and diagnosis as well as treatment In the seventh edition there has been considerable revision of the sections dealing with infant feeding prematurity and the specific fevers whilst asthma and pink disease are included for the first time The little book is clearly and sensibly written and despite the wide field covered and the modest size and price of the resulting volume the author has succeeded in avoiding most of the faults of manner and matter common in books of this kind

2 Dr Zahorsky's work, though it contains much useful information and little to which exception could be taken is not equally successful. By the use of small print he has produced a small illustrated text-book of pædiatrics which is hardly adequate as a student s primary source of information on pædiatrics and on the other hand is not specially suitable for purposes of rapid revision. The second edition has been extensively revised a chapter on diseases of the eyes and ears has been added and several good coloured plates are now included.

Muir s Bacteriological Atlas

Second edition Atlas enlarged and text rewritten by C E van Rooyen M.D Edin. Halley Stewart Research Fellow and Lecturer in Bacteriology in the University of Edinburgh. Edinburgh: E and S Livingstone 1937 Pp 90 15*s*

The late Richard Muir s book has for some years been the only bacteriological atlas in common use in this country Muir's fame as a technician naturally spread far beyond the walls of the University of Edinburgh where his work was done He was also an artist in his way and his coloured plates present an almost ideal representation of micro-organisms Dr van Rooyen s additional plates are in every way up to Muir s standard and indeed, in places surpass it. The colour reproduction of the 83 plates is of high quality and considering the cost of such things the price of the book is very reasonable.

The Low Voltage Cathode Ray Tube

and its Applications By G Parr, Radio Director Edison Swan Electric Company London Chapman and Hall. 1937 Pp 177 10*s* 6*d*

The cathode ray tube is a form of oscillograph which has proved a valuable instrument in the analysis of rapidly altering electrical potentials and currents It consists essentially of a beam of electrons ejected from a heated filament, concentrated into a fine jet by an electrical field and allowed to fall on a fluorescent screen The impact produces a luminous spot The whole instrument is enclosed in an evacuated tube. The pencil of electrons forms a sensitive pointer which can be deflected by electrical and magnetic forces and since its inertia is practically zero the deflections follow perfectly any variations in these forces however rapid they may be.

Mr Parr divides the cathode ray tubes into three types according to the voltages applied to them—high medium and low The first class employing some 60 kv is not dealt with here but a detailed and practical description is given of the other instruments which work under various potentials up to 3000 volts The use of these tubes is rapidly increasing as new applications are continually being found. Any varying quantity such as sound waves, can be converted into the corresponding electrical variation and analysed on a cathode ray tube and these instruments have for some time been used in this side of physiological research Owing to its application in one method of television, the recent development of the cathode ray tube has been very rapid. The earlier chapters give a very useful and detailed account of how to handle the apparatus—the focusing of the recording spot and its deflection for various purposes.

Our only criticism of this book is that the title is misleading. It suggests a handbook dealing with some particular tube, whereas the subject matter covers all the instruments which are likely to be met with to-day in normal research work.

Manual of Practical Anatomy

By J. ERNEST FRAZER, D.Sc., F.R.C.S., Professor of Anatomy in the University of London, and REGINALD H. ROBBINS, M.A., M.D., Assistant Lecturer and Senior Demonstrator of Anatomy, St. Mary's Hospital Medical School. London: Baillière, Tindall and Cox. 1937. Vol. I, pp. 526; Vol. II, pp. 442. 10*s.* 6*d.* per volume.

THE dissecting room in a British school of anatomy is traditionally a sort of club where the student spends a good deal of time acquiring conversational arts and incidentally perhaps hoping to acquire technical knowledge by a kind of osmosis. When the preclinical sciences had not much else to offer than a course in dissection of the human body, and physiology, now become so rich and extensive, was forced to eke out its scanty store by teaching histology, it was inevitable that the student should live in the "rooms." Practical manuals of anatomy which fitted into this scheme were used as text-books as well as practical guides. It has now become impossible to continue in this traditional way, and practical anatomy has to be taught by schedules arranged according to a fixed time-table. In most departments special instructions for dissection are issued week by week to its students. Much time is gained by this method, and it is possible to use the time so saved for the study of other aspects of the structure of the body than those of position and topography—aspects even more important, conveying some understanding how the body is made and how it works. In a sense the practical manual in book form belongs to an epoch that is over. But there are still students who find works of this kind do provide them with the necessary amount of information in a period of time that is neither too long nor too short. In this one the text is full and accurate, thus fulfilling the chief criteria of the dissecting manual. The illustrations are not perhaps quite up to the standard of the text, but they show clearly enough what must be looked for at each stage of the work. The long teaching experience of the authors is sufficient guarantee that they have anticipated the difficulties of the average student.

A Textbook of Embryology

Third edition. By HARVEY ERNEST JORDAN, A.M., Ph.D., Professor of Histology and Embryology, University of Virginia; and JAMES ERNEST KINDRED, M.A., Ph.D., Associate Professor of Histology and Embryology at the University. London: D. Appleton-Century Company. 1937. Pp. 613. 25*s.*

THIS text-book is an excellent example of the teaching manual. The text is clear, the illustrations are abundant, the order and logic of its arrangement are manifest, and nothing appropriate to the purpose seems to have been omitted. The usefulness of the work is increased by the inclusion of a laboratory guide and this has been put into a convenient form. It begins with a list of laboratory exercises so arranged that to work through them would entail a complete exploration of the anatomy of the embryo. In addition an illustrated guide is provided to enable the student to find his way through serial sections of the usual laboratory types. Every aspect of embryology is covered, and chapters are included on the recapitulation theory, prenatal and postnatal growth, teratology, and eugenics. Both authors are distinguished biologists, though neither of them belongs to the medical profession. This perhaps may explain the only slip that we have noticed—namely, the use of the term "lochia" in the same sense as "afterbirth."

There is, however, one thing that is lacking in this book. Embryology has now become a great science. Nothing is so dramatic and impressive as the formation of a new organism from a fertilised ovum. The sequence of events by which this is achieved is fundamentally the same for all organisms, and is always the same in the same organism. Since this sequence is so invariable the conclusion cannot be escaped that there must be a causal mechanism behind it. This manual is descriptive in its outlook and does not convey to the student any vivid sense of the dynamic aspect of embryology.

Physiologie de l'innervation rénale

By JEAN HAMBURGER. Paris: Masson et Cie. Pp. 180. Fr. 30.

THE kidney has a rich nerve supply whose function is still in doubt. The different lines of approach of various research workers to this problem are here reviewed and their conclusions criticised. British readers will be astonished to find no reference in the book to the recent work of E. B. Verney, and those interested in special aspects of the subject will find other less obvious omissions. It must be conceded, however, that the various points of view are fairly represented, and the neglect of certain individuals does not impair the main purpose of the book. The author's own experiments are of particular interest. A series of beautiful X ray photographs depict the vascular system of the kidney after injection with Thorotrast, and vasodilatation after nerve section is demonstrated by this means, which is free from many of the objections attending other methods. Briefly, the more complete the denervation, and the nearer to the kidney, the greater the dilatation. There is a suggestion, however, that the nerves in the hilum itself may have the opposite effect. With regard to diuresis, the conclusions of others that denervation has no permanent effect are confirmed, but stimulation of the nerves causes oliguria and albuminuria. The author is unwilling, on the evidence available, to say whether this is a pure vasomotor effect or whether secretory nerves play a part. Perhaps the most interesting experiments deal with orthostatic albuminuria, which can be readily produced in animals. The presence of albuminuria in association with certain nervous lesions is discussed, and experiments are cited which show that denervation of the kidneys prevents the appearance of orthostatic albuminuria in animals which previously exhibited the phenomenon quite readily. The author wisely refrains from drawing any far-reaching conclusions, but stresses the frequent coincidence of vasoconstriction and functional albuminuria. The book is rounded off by a survey of other functional renal troubles met with in clinical practice. It is stimulating, easy to read, and foreshadows results of medical importance.

THE LANCET

LONDON SATURDAY, AUGUST 21 1937

THE ORGANISATION OF A BLOOD TRANSFUSION SERVICE

A SCHEME for providing a supply of live blood for those who will not without it recover from accident or desperate illness has been described by Prof W N SHAMOV of Kharkov and Prof S S YUDIN of Moscow in the last two issues of THE LANCET. It was born more than ten years ago in Shamov's experimental work on cadaver blood and has been gradually adapted by Yudin to the needs of a surgical clinic. There is little in their description which has not been published in Russian or French papers during this long probationary period. The new fact is the demonstration that the scheme works and if only on this ground it is worth careful scrutiny. The surgical and accident department of the Sklifosovsky Institute in Moscow serves the needs of a city of some 4 million inhabitants. There are many cases of severe traumatic shock, of copious gastro-duodenal bleeding, of cancer amenable only to extensive excision. The institute now has at its disposal quantities of blood available day or night for immediate use sufficient to meet all these needs. The stored blood is sterile, the risk of conveying syphilis has been excluded, and provided the usual group compatibility is observed there is little fear of any biological reaction. Furthermore the blood is not only a suitable colloidal fluid, it has retained completely its rôle as an oxygen carrier. All this has been achieved, as every one has been dramatically told, by the use of corpse blood or, as it might more gently be expressed, with the coöperation of patients who have passed beyond reach of help for themselves. There is a constant stream to the institute of such unsaved lives whose vital fluid is still intact and an average of two litres of blood can be drawn from the jugular vein through a small incision in the neck. At first some objection was taken to this vicarious use of human blood. To the primitive mind the blood is the bearer of mystic qualities and there is in Russia an instinctive fear of giving away so valuable a part of the organism, coupled, Shamov suggests, with an equally instinctive reluctance to disturb the repose of the dead. These have been met by the counter-suggestion that the relations of the dead person should feel satisfaction at rendering so noble a service to fellow sufferers, and the medico-legal difficulties were solved after the Kharkov congress of 1930 had secured the assent of surgeons generally to the principle. The papers which we published tell the story of how during the last ten years every hindrance has not only been met but regarded as a stepping-stone to further endeavour. Whether imitable elsewhere or not it is a splendid object-lesson.

Before turning to the absorbing question of imitation it would be well to consider briefly the special claims made in Russia for the use of cadaver blood as a restorative in preference to blood from the living even if this were equally available. In the second paragraph of his article Shamov asks a question whose solution has captured his imagination and informed his whole inquiry. It is this: can a defect in a living body be remedied by the transplantation of tissue from the dead already doomed to perish? More than 20 years since PEYTON ROUS and J R TURNER[1] showed that it was possible to preserve human red blood cells alive for several weeks in a solution of dextrose and citrate at ice box temperature and that the results of transfusion with preserved blood were as striking as those seen after transfusion with blood freshly drawn. After disposing of the bogy of harmful cadaveric toxins Shamov has come to attribute vital, almost it seems mystic, properties to the surviving blood of dead donors, which has in his hands showed qualities transcending that from living donors—namely, a less hostile reaction and a better stimulus to new blood formation. And with this Yudin's clinical experience has now led him to agree. On a more *humdrum level* it is obvious that it is easier to exclude evidence of syphilis or other disease in the leisurely examination of a dead donor, thus removing the difficulty of a Wassermann reaction while you wait. But there is another advantage which has emerged from the Russian work and may be fundamental. The blood drawn from a corpse after sudden death in cases where there has been no prolonged agonal disturbance first coagulates and then undergoes a liquefaction owing to the gradual disappearance of fibrinogen. It is known that blood effused into large body cavities may remain fluid for a long time and R G MACFARLANE has recently found[2] that fibrinolysis may occur in blood withdrawn after surgical operation. It is amazing that post-mortem liquefaction should for so long have failed to attract attention; its significance in regard to intravascular clotting remains to be seen. The work of Skundina and Russakov quoted by Yudin suggests that the liquefaction of the coagulum formed immediately on withdrawal of the blood is not associated with actual digestive breakdown of the fibrin. This spontaneous liquefaction means that cadaver blood requires no addition of anticoagulant and to this freedom of the transfused blood from citrate is attributed the reduction in the number of reactions. In this country large infusions of citrated blood are constantly being given by the Marriott-Kekwick continuous drip process. Yudin remarks that the effect of large quantities of sodium citrate in the circulation is quite unknown. Experience here already indicates that they do no immediate harm

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[1] *J exp Med* 1916 23 219

[2] *Lancet* 1937 1 10

What may be the ultimate effect of anticoagulants on stored blood we do not know

So much for the claims made for the Russian scheme, the success of which in situ is impressive Can and should it be imitated ? The use of blood from dead bodies seems to be repugnant to the British mind and the same feeling has been evinced in Canada and America It has been overcome in Russia where in this respect reason has triumphed over instinct If the voice of medicine was certain it would hardly be less impressive here It is partly a question of nomenclature No one would like to think of being revived by corpse blood, but would he feel any hesitation at a *supravital* infusion ? And the appeal of man to help man is a growing factor in current psychology If popular repugnance was overcome there would remain the obstacle of the law which constitutes the coroner the guardian of accidental death For the moment the Russian scheme should be a stimulus to the organisation in this country of voluntary donors The creation of a national service on a voluntary basis, with branches in all provincial towns, is now under discussion by the British Red Cross Society, whose Voluntary Blood Donors Association already provides a highly efficient foundation for such a service With the growing knowledge of the best means of preserving blood the establishment of depôts should be increasingly possible The contribution to a depôt of a pint of blood once or twice yearly at the donor's convenience *might lack the romance and excitement* which attaches to the sudden call and the hurried journey to hospital, it would also lack its inconvenience Whether the prospect of contributing to an impersonal pool rather than to an individual sufferer would dry up the springs of altruism remains to be seen, if it did, other sources could be made available The Cook County Hospital, Chicago, has established a blood bank[3] To this all members of the staff make contribution of blood from patients under their care in the wards, it may be taken from the subjects of congestive cardiac states who are better without it, or from others who can well spare it On this bank the staff are at liberty to draw as occasion demands, paying in the equivalent at the next opportunity It is unfortunate that the peculiar organisation of the practice of medicine in this country places most of the blood transfusion work in the hands of medical men attached on a part-time basis to the hospitals which they serve, and who have neither the time, the assistance, nor the laboratory equipment to attempt to solve this problem

THE NATIONAL CRIME-SHEET

THE exemplary behaviour of the feminine sex is once more the salient feature of the annual Criminal Statistics The report for 1935 (Cmd 5520 H M Stationery Office 3*s* 6*d*) shows that while over 60,000 males were found guilty of indictable offences, the total for females was much less than 9000 When the figures are divided into age groups another striking fact emerges More than half the offences committed by males are by boys or youths under 21, 39 per cent indeed are committed by boys under 17 The women, when they are bad, grow worse as they grow older, only 17 per cent of their offences are committed under the age of 17, in the age group from 21 to 30 the percentage for women is almost identical with that for men, but the group aged 30 and over is responsible for 47 per cent of indictable offences among women against only 26 per cent among men The inventor of the motor car seems indirectly to have caused most of the crime in England Out of the total number of offenders of all kinds traffic offences accounted for 57 per cent in 1935 Only 9 per cent were real crimes, that is to say, the indictable offences which go to assizes and quarter sessions Three quarters of these real crimes were larceny, 20 per cent committed by children under 14 and 51 per cent by persons under 21 Traffic offences jumped up by nearly 100,000, it is easy to realise the extra strain they impose upon our police forces Drunkenness, which declined from 1920 to 1932, is showing some increase in recent years Prostitution offences are up by over 50 per cent, the figure for 1935 is over 2½ times the figure for 1931 A strange element in our annual crime sheet is the recurrence of nearly 27,000 offences of Sunday trading in those few districts where it is the practice to levy fines on shopkeepers for conduct which is presumably felt to be *malum quia prohibitum* rather than *malum in se* The shopkeeper prefers to keep his premises open and pay his fine, making the best (or the worst) of both worlds, the locality is not ashamed to put a premium on unlawfulness, but draws its royalties regularly in relief of local expenditure Foreigners could hardly find a better instance of the English conservatism which hesitates to repeal Lord's Day Observance Acts and the English ability to compromise with conscience To turn to something more honestly criminal, the figures of murder remain as stable as ever, no matter how population varies About 100 persons, aged one year or over, are known to the police to have been murdered in the year In half these cases in 1935 the murderer or suspect committed suicide In 2 cases, involving 2 victims (one of whom died after an illegal operation), no arrest was made Forty seven persons were arrested on charges of murder and 8 of them were hanged, 6 were found insane on arraignment, 14 obtained the ridiculously expressed verdict "guilty but insane," 1 was certified insane after conviction and was removed to Broadmoor It is a useful illustration of the difference between the legal and the medical standards of insanity, the law has insisted on getting its verdict of "guilty" against many men whom alienists would regard as of deranged mind The cost to the community of the existence of mad murderers is shown by the statistics of criminal lunacy There were 413 of them in asylums at the end of 1935, 106 had been detained for twenty years and over

There is a grand total of 759,423 persons found guilty in 1935 of offences of all kinds What happens to them? Over 90 per cent were dealt with by the magistrates, less than 1 per cent went before a jury Dismissal of the case after the charge has been proved, binding over or placing under a probation officer accounted for 16 per cent 80 per cent were fined only 3 per cent were sent to prison, penal servitude, or Borstal In its preface to these annual statistics the Home Office gives particular emphasis this year to corporal punishment in view of the Home Secretary's decision to appoint a committee to examine the question. We are shown the figures since 1904 of persons convicted of robbery, for instance, and sentenced to corporal punishment This type of sentence is more frequent since 1920 than in pre war years The analysis of the orders made by juvenile courts for administering the birch rod shows that the total of 218 comes from quite a small number of courts None of the metropolitan juvenile courts or the juvenile courts in big towns like Birmingham Liverpool Sheffield Leeds Bristol Cardiff Portsmouth or Plymouth ordered the birch, whereas small towns like Windsor (7 orders) and Winchester (5 orders) retain a faith in the rod which it is tempting to ascribe to famous local traditions In the past 33 years the report tells us 47 men have been sentenced to corporal punishment for indecent exposure medical science if its exponents were encouraged to investigate such cases might well show some better method of dealing with exhibitionism

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[3] Fantus B *J Amer med Ass* July 10th 1937 p 128

It is tempting to pick out the singular variations displayed by magistrates in different parts of the country Why do the Southampton justices place only 9 per cent. of adult offenders under probation when the percentage for Portsmouth is 34? Why is the corresponding percentage for Blackpool under 10 when at Southend it is over 37? Why in the counties is it as high as 44 in Hertfordshire and as low as 8 in Devon? Similar variations are visible in the tables about coroners The coroner for South Buckinghamshire directs or requests post-mortem examinations in 60 cases and is able to dispense with an inquest in 42 of these the Crediton district coroner with a higher total of inquests has a post-mortem examination in only 8 Is the anomaly due to the lack of local facilities? These post-mortem figures reveal a further diversity They are grouped under Inquest cases' and Non inquest cases In Bristol the coroner directs or requests 372 post-mortem examinations in inquest cases against 26 in non inquest cases conversely in Liverpool the respective figures are 90 to 335 Fewer autopsies were asked for by coroners in 1935 than in 1934 though the total of inquests was slightly larger The number of inquests held by the coroner without the assistance of a jury (rather more than a quarter of the whole) continues to rise Lastly it is worth noting that the number of inquisitions quashed or amended by order of the High Court in 1935 was no more than one out of over 67 000 Can the reformers deduce from this any overwhelming need to alter the constitution and practice of the coroner's court or to bar the appointment of men with medical qualifications?

ÆTIOLOGY OF CANCER OF THE BREAST

THE investigation of cancer by genetic methods has reached an interesting stage The official publication of the International Union against Cancer[1] contains no less than three reviews on this subject one by Prof R KORTEWEG of Amsterdam one by Dr L KREYBERG of Oslo, and a third by Prof LEO LOEB of St Louis A review on the same subject by Mr A. P GORER appears elsewhere in this issue What has happened in this field of cancer research to stimulate all this activity? The study of cancer by the methods of genetics had disclosed the remarkable fact that by inbreeding it is possible to produce genetically pure strains of mice in which the mamma will exhibit the development of malignancy in either a uniformly high or a uniformly low percentage of female animals Until recently this was advanced as an argument to prove that the ætiology of cancer generally was essentially a problem of genetics and could be explained along mendelian lines This view has never found acceptance by experimental pathologists On general grounds they have been unable to look upon the highly complex group of biological phenomena, which for the sake of convenience are grouped together under the term cancer' as if it was homologous to such comparatively simple biological phenomena as body size or coat-colour Furthermore in using a different tissue—the skin—as their test object they found that although the skin of the mouse is very susceptible to the development of malignancy it does not show a high incidence of spontaneous skin tumours and that it was not possible by inbreeding to obtain a genetically pure strain of mice with a uniformly high incidence of spontaneous skin cancer The study of carcinogenesis in the skin showed that the development of malignancy in that tissue depends on two main factors the presence of a carcinogenic substance applied from without and the factor of susceptibility of the skin to that substance The further study of the development of mammary cancer in genetically pure strains has gradually led to the same conclusion Thus W S MURRAY[2] found several years ago if the ovaries of mice of a pure strain with a high incidence of mammary cancer in the females were transplanted into the males of the same strain that mammary cancer could be made to develop in the males A LACASSAGNE[3] performed the crucial experiment of producing mammary cancer in the males of such a strain by the prolonged administration of the ovarian hormone—œstrone He demonstrated further that œstrone will produce mammary cancer more readily in males belonging to a strain with a high incidence of mammary cancer in the females than in those belonging to strains with a low incidence and that œstrone will fail to elicit mammary cancer in the males of a pure strain in which no spontaneous cancer of the mamma ever develops in the females The conclusion that two factors—carcinogenic substance and susceptibility—are essential for the development of mammary cancer in pure strains was thus established as clearly as it had been for skin cancer in mixed strains The apparent difference between the ætiology of skin and mammary cancer finds an explanation in the fact that in mammary cancer both factors reside within the organism, while for the skin only the factor of susceptibility resides within the organism and the carcinogenic substance has an external origin The result of inbreeding is to accentuate only the factor of susceptibility or insusceptibility as the case may be As Mr GORER points out, an explanation along mendelian lines may be applicable to the inheritance of the factor of susceptibility but not to the more complex phenomenon—the incidence of cancer of the mamma The term susceptibility to mammary cancer is a vague—a deliberately vague—term, and it is by no means established that the factor of susceptibility resides entirely within the cells of the mamma CRAMER and HORNING[4] found that the adrenals of mice from a genetically pure strain with a high incidence of mammary cancer undergo spontaneously a specific process of degeneration preceding the appearance of cancer of the mamma, and that the same process of degeneration can be induced in mice of mixed strains, in which it does not appear spontaneously, by the prolonged administration of œstrone

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[1] Acta 1937 2 136 140 148
[2] J Cancer Res 1928, 12 18
C R Soc Biol Paris 1934 115 937

Another new problem is introduced by the remarkable observation of J J BITTNER, referred to by Mr GORER, that the fostering of the newly born females from a high cancer strain by mice from a low cancer strain greatly reduces the incidence of mammary cancer It must be realised that these animals belong to a strain which, according to genetic conceptions, is still genetically pure and ought to have a high incidence of mammary cancer It follows that in genetically pure strains of mice "some influence," as BITTNER calls it, is transmitted through the mother's milk, which is of prime importance in determining the incidence of breast cancer Here again an explanation along genetic lines is not easy to imagine What is the part played by this factor, transmitted by the mother's milk, in the ætiology of breast cancer ? Is it concerned with the susceptibility factor or with the carcinogenic factor ? And what is the nature of this "influence" ? Is it inanimate—a chemical substance, or animate—a virus ? The ingenuity with which cancer research workers are unravelling these intricate conditions makes it likely that we shall not have to wait long for an answer to these exciting problems They may have an important application in the prophylaxis of breast cancer in women The evidence presented by CRAMER in a recent paper on the ætiology of cancer of the mamma in the mouse and in man[5] shows that in the human subject also the mamma is an organ for which the familial incidence of cancer is exceptionally high

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[4] *J Path Bact* 1937, 54, 633

[5] *Amer J Cancer* 1937 30, 318

ANNOTATIONS

THE ACCURACY OF THE MEDICAL DIRECTORY

UP to the year 1920 it was the practice of the Medical Directory to affix an asterisk sign to the names of those who had not returned the annual circular and whose entry therefore might be imperfect or misleading In that year an alteration in paragraphing crowded out the asterisks, and in recording this omission we expressed the hope that it would not lead to any less diligence, on the part of the publisher or on the part of those who supply the information, in keeping up the standard of a work of reference whose value depends on being up to date The contributors indeed may take honest pride in the result of their collaboration, for the directory is unique of its kind as anyone will discover at once if he looks for the same thing in other countries, and although it has no legal value as evidence, the directory is nevertheless freely used by public bodies for supplementing the official but scanty record of the Medical Register Time has gone by and the task of editing the Medical Directory has not become more easy, hundreds of circulars were not returned, and two years ago we came to the rescue by printing the names of those who had not communicated their present address to its editor The list was surprisingly long and its length explained among other things how it is that so many members of the medical profession get their names removed from the Medical Register owing to failure to notify their whereabouts to the Registrar of the General Medical Council The effort of the Medical Directory if successful would obviously have been of real benefit to those who had inadvertently run the risk of erasure The reminder was in fact seen by many of them or brought to their notice by their friends Rather disappointingly however the names of uncommunicated addresses which appeared in the following year included a number of those who had already been warned No further reminder will be issued but we have been asked to appeal to members of the medical profession who have not already communicated their present address to the directory to do so now and to confirm or correct the personal details Failing that, the words "Address uncommunicated" will appear in lieu of an address in the Medical Directory for 1938 This is not a reprisal, it is no more than fair to warn readers of possible disappointment

MIDWIFERY IN RURAL AREAS

THE Associated Country Women of the World have been sufficiently interested in the problems of rural midwifery to make an inquiry from representatives in many part of the world and to issue a report[1] Lady Eleanor Cole who contributes a foreword to this report, remarks that she has selected from the replies to a questionnaire those facts that seem peculiar to the country in question or that have been unmentioned by other countries, and the result is an interesting and rather stimulating survey of what is lacking to women faced with the hazards of child birth in inaccessible districts, with hints on directions in which the need might be met. Dr Esther Carling in a summary of the replies says they showed straight away the presence of two streams of thought: (1) Should these be centred round the home or the hospital? (2) Should they focus on the well trained midwife or on the medical practitioner? It is evident she remarks that established tradition and local circumstances must first determine the focus of endeavour. In New York State only 2 per cent of deliveries take place outside hospitals, in France the avowed aim is to make it possible for every child to be born safely at home. In America there is hardly any organised midwifery by midwives; in France the sage femme has never been replaced by the medical practitioner in domestic midwifery. Making these allowances Mrs Carling asks whether it should not be possible to agree upon two foundation principles: (1) team work everywhere but team work based upon (2) midwives for midwifery. She recalls how in this country one of the blackest spots of high maternal mortality was changed not to grey but straight to white by a concerted drive. No one doubts in this case the relation of cause and effect. What is the doubt in some minds is that although it may be possible in some areas at some times to keep efficiency up to peak level it can hardly be possible for this to happen at all times and in all areas. Perfect team work may cover up individual deficiencies, but in the long run the result must depend on the training of the several members of the team. There are Mrs Carling thinks indications all over the world that even in quarters where hospital care is desired the midwife shall be at the heart of the service; and the report is enlightening in its account of the varied time and method of training of midwives in various countries. In New Zealand with the consent of the attending doctor the midwife is allowed to administer chloroform to the obstetrical degree; elsewhere it is suggested her inability to relieve the pains of labour has often tilted the scale against the employment of the midwife. But the determination in this country to organise relief from pain will, Mrs Carling is sure, not remain an isolated endeavour. The approval given by the Central Midwives Board to the administration of gas and air by midwives should within a few years bring the possibility of obtaining relief within the reach of parturient women everywhere.

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[1] Special supplement to the *Countrywoman* August 1937, 3*d*

SHOULD THE ECZEMATOUS WASH?

THE principle that should govern the treatment of an eczematous skin is to put it at rest and not irritate it by antiseptic applications or by the constant effort born of surgical training to clean up the part. The less the interference with the skin by patient or doctor the better for the eczema. It is probably wrong repeatedly to clean pastes off the skin for fresh application since the injury occasioned by the removal cancels the virtue of the treatment. Paste applications should be left undisturbed and healing will take place beneath them. Goldman[1] has recently investigated the reaction of the skins of infants and children to soaps by patch test methods using small bits of soap 10 per cent and 5 per cent solutions and by repeated swabbings. In testing 127 children against seven common soaps he found no reaction to repeated swabbings. Mild reactions were obtained to patch tests more commonly in children than in new born infants and rather more noticeably to a soap containing cresol than to the other soaps tested. Balyeat[2] had also observed this fact. In a previous investigation Goldman[3] had found that pure coconut oil soaps provoked more reactions than others.

While the damaging effects of soap and water may be due to alkaline irritation, certain persons react to soap because they are hypersensitive to one or more ingredients. Hazen[4] found 8 such patients in a series of 127 and all investigators agree that those subject to contact dermatitis are more liable than normal subjects to react to soaps. This may well be a cause of persistence or relapse of dermatitis. Most authorities would probably agree that the use of soap is undesirable in the presence of eczema; some forbid even plain baths or insist upon the addition of bran or oatmeal as a softening agent. Others perhaps on theoretical grounds regard the use of an isotonic saline solution for cleansing purposes not only harmless but beneficial and desirable. Actually some patients and some conditions may be harmed and some helped by the use of water. Probably much depends upon the common sense and intelligence of the patient in using baths. The even pressure of a warm water bath is soothing; a very cold or very hot bath is ultimately irritating in spite of any immediate relief to itching. It is desirable to lie in the bath and not to wash the skin, to blot dry subsequently with a soft warm towel without rubbing. The temptation to scrub the skin with a rough towel on leaving the water is one to be resisted and the desire to do this will pass. The use of the bath is obviously only suited to certain temperaments and demands a degree of intelligent coöperation between patient and practitioner.

ILLICIT TRAFFIC IN NARCOTIC DRUGS

THE advisory committee of the League of Nations on traffic in opium and dangerous drugs has re-elected Dr Chodzko of Poland as chairman, Mr Delgorge of the Netherlands as vice-chairman, and Major Coles of the United Kingdom as rapporteur. The committee call attention to the fact that the absence of drug-addiction within a country does not necessarily imply that clandestine manufacture leading to illicit traffic can be excluded. They deplore the fact that the smuggling of opium and to a greater extent of manufactured drugs by certain foreign nationals in China is paralysing the laudable efforts of the Chinese Government to deal drastically with the drug situation. The coöperation of Japan is invoked to arrest the appalling state of things in the provinces now under Japanese influence. It was reported to the committee that from Dairen thousands of letters containing drugs were posted to the United States of America, Egypt and elsewhere. A disquieting statement appears in the report of a subcommittee on seizures in regard to the development of a new type of market for prepared opium in Canada. It is alleged that the use of this drug formerly limited to smoking has now extended among occidentals on the Pacific coast to include hypodermic (usually intravenous) injection. This habit began to be encountered shortly after measures of local control had rendered morphine, heroin and codeine impossible or at least very difficult to obtain. The habit brings with it the serious risk of very severe abscesses from the injection of the opium. This development naturally causes Canadian and American narcotics administrations to view with special concern the recent large seizures of smoking opium destined for the illicit traffic in North America The advisory committee is now concentrating its attention on three important questions—namely, "the situation in the Far East, the clandestine manufacture of narcotic drugs and the preparation for a conference on the limitation and control of the cultivation of the opium poppy" This last topic, which has been discussed for years without any drastic outcome, is surely fundamental to the other two and to the whole problem of international control of drugs of addiction

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[1] Goldman L J. Amer med Ass 1937 108 131

[2] Balyeat R M Northw med J., Kimberley Idaho 1935 34 12

[3] Goldman L Univ Cincinn med Bull 1935 7, 101

[4] Hazen H H Arch Derm Syph 1928 18 151

A CHANGE OF POLICY

ALL those who have the care of tuberculous patients should be aware of a recent change of policy in the application of the Queen Alexandra Sanatorium Fund It was the wish of the late Lord Balfour of Burleigh that the climatic advantages which he knew so well in the Davos valley should be at the disposal of persons of small means, and it was his personal influence and enthusiasm that brought into being the English Sanatorium which at long last took the place of the old British Home This sanatorium was opened in 1909 and closed in October, 1914, after five years of useful service It was never reopened, the difficulties of transit and exchange were too great, and in 1922 the building and all that it contained was sold for use as a Swiss popular sanatorium The proceeds were then used in the form of grants to enable patients to go to Davos or to prolong their stay there when they would not otherwise be able to do so But during these years the treatment of pulmonary tuberculosis has been developing rapidly and there are now in England sanatoria with a technical equipment as good as any in Switzerland At its recent annual meeting, over which the present Lord Balfour presided, the medical members of the Fund council firmly expressed their opinion that treatment and régime are more important than climate, and it was decided then and there to ask the Charity Commissioners so to alter the original constitution of the Fund as to allow the grant to be used for treatment in sanatoriums at home This decision does not preclude a grant for alpine treatment in any case recommended for it by the Fund's medical advisers, nor is it proposed to discontinue the treatment of children in Switzerland, which has been so happy a feature of the Fund's recent activities

POISONOUS UMBELLIFERS

FOUR poisonous members of the umbelliferæ family are common in the British Isles and have frequently been the cause of death in cattle and other domestic animals and, more rarely, in human beings who sometimes mistake them for parsley or parsnip Of these four the spotted hemlock and fool's parsley are found in hedges and waste places generally, whereas the water hemlock and the water dropwort favour marshy ground and the banks of ditches Spotted hemlock, *Conium maculatum*, owes its poisonous properties to the alkaloid coniine which acts upon motor nerve endings and causes death by paralysis of the respiratory apparatus The symptoms of poisoning by this plant are first a burning pain in the mouth and vomiting from local irritation, followed by increasing weakness of the legs and dyspnœa with cyanosis Convulsions sometimes occur but are unusual It was from spotted hemlock that the Greeks probably prepared their official poison for the use of those who had been condemned to compulsory suicide, and the symptoms which Plato describes as preceding the death of Socrates certainly resemble those of coniine poisoning The active principles of the other three poisonous umbellifers appear to be similar in action to picrotoxin and produce cerebral irritation followed by paralysis McGrath has recorded[1] a typical fatal case of poisoning by water dropwort, *Œnanthe crocata*, which recently occurred in southern Ireland A child aged nine dug up and ate roots which she found growing on the bank of a river in co Kerry She vomited and appeared to be very ill almost immediately, and within a quarter of an hour she collapsed and rapidly became unconscious She then began to have severe general convulsions at short intervals, and showed signs of respiratory failure for which artificial respiration had to be given Although her breathing later improved the convulsions continued and could be checked only for a time by the administration of chloroform She became progressively weaker and died three hours after she had eaten the roots Post mortem examination showed little that was abnormal. The mucous membrane of the pharynx, œsophagus, and stomach was slightly injected, and there was some congestion of the lungs and on the surface of the brain An attempt was made to isolate the toxic substance from the stomach contents but the oily fluid which was ultimately obtained had no effect upon a guinea pig into which it was injected It is clear, however, that the active principle of water dropwort, which has been named œnanthotoxin, is a potent one Further study might show that it has some therapeutic uses

MILK CURD AND INFANT FEEDING

WHILE the present general interest in various aspects of cow's milk as a food and as a commodity has never been exceeded, the question of the best form of its administration to infants has not received much attention recently There is still much difference of opinion in this country among pædiatric experts, all of whom would, however, agree that with differing formulas they have the same object in mind—namely, to give the baby who must be fed in an unnatural manner the most satisfactory dietetic mixture While experts disagree the practitioner remains fretted by such problems as when (and when not) to use sodium citrate, what is humanised milk, and are Truby King nurses always right? The Council of Foods of the American Medical Association has recently attempted, by authoritative surveys,[2] to help those who are confused One concerns the question of curd digestibility, this being the part of cow's milk which is most likely to disturb the human baby's stomach Tests on what is termed "curd tension" have been carried out over a number of years, the method being to coagulate milk by a solution of pepsin and measure the force required to pull or push a knife blade through the resultant curd With raw milk this tension is usually high, although there are many variations between the products of different cows The modification of the curd, which means in effect reducing the curd tension, can be achieved in many ways, of which boiling, dilution, and the addition of acids or alkalis, in that order, appear to be the most effective measures Similar conclusions were reached by H L Wallace[3] in an address delivered to the Edinburgh Obstetrical Society earlier this year Wallace had also conducted certain tests on milk which was clotted by the addition of rennin, he found that after dilution by water and boiling the size and toughness of the milk curd were so reduced that there was no advantage in adding sodium citrate The addition of partially dextrinised starchy foods to milk did not in these Edinburgh experiments affect the size and consistency of the clots. Dried milk prepared by the roller process produced a fine precipitate, but in the specimens dried by the spray process that were tested in Edinburgh there was some clotting although the individual curds were comparatively small and soft The application of such experiments to everyday problems of infant feeding is carried a stage further in the American reviews by a survey of certain clinical experiments These show that in general milk with a low curd tension is less likely to be delayed in the stomach and such digestion as takes place in the stomach is more quickly accomplished when the curd is soft On the whole the best digestion appeared to be obtained with ordinary boiled milk and there seemed no obvious advantages as far as clinical observations went in making special additions of acids and alkalis or patent foods. This conclusion is in accord with that reached by Wallace—namely that fresh cow's milk boiled diluted with water and containing added sugar and cream in the required amounts is a good programme, although from other considerations Wallace concludes that a good variety of dried milk is probably the best available substitute for human milk. There is thus agreement on one aspect of infant feeding The next step is to settle the important question of the degree to which cow's milk should be diluted for infants.

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[1] McGrath J *Irish J med Sci* July 1937 p 309
J Am r med Ass 1937 108 2040 2122
[3] *Lancet* July 3rd 1937 p, 22

A CENTURY OF CORNEAL TRANSPLANTATION

A REMINDER of the fluctuations between popularity and oblivion to which new methods of treatment are liable before they are finally either adopted or abandoned is to be found in this week's extract on corneal transplantation (see p 474) from THE LANCET of 100 years ago Ophthalmology can supply at least two other examples of methods which after a series of ups and downs have at last won through. Cautery puncture was used empirically with some success nearly a century before Gonin while contact lenses were first made in 1850 though they have only been worked out effectively during the last three or four years The attempts to devise a way of transplanting a cornea to relieve blindness deemed incurable described by Dr Bigger in 1837 were the outcome of some measure of success in treating a blind gazelle There have been many revivals since the natural urge to substitute a transparent tissue for an opaque one which stimulated this experiment on 18 rabbits of which no less than 16 are said to have recovered some degree of vision But only quite recently has corneal transplantation been regarded as really practicable offering if properly applied good prospect of restoring some measure of sight At the present time the method is engrossing the attention of many workers anxious to improve a technique which is still far from perfect though it is maintained that of operations on suitable cases ' about half are successful according to criteria laid down by Mr Tudor Thomas[1]

The feasibility of transplantation of the cornea was naturally dependent in large measure on the state of surgery in general Good results could hardly have been expected in pre-antiseptic or even pre-aseptic days; it is interesting to read that Dr Bigger made the observation though he was not in a position to appreciate its significance that by the local application of a weak solution of sublimate his results would be greatly improved Not only asepsis but modern researches into tissue culture tissue viability and serological reactions have helped in the evolution of a practical method of performing this delicate operation. Even 100 years after Dr Bigger's first experiments there is still not only controversy on points of procedure but indeed little unity of opinion beyond a general concurrence that the operation is practicable and that the results are roughly those attained by Dr Bigger—namely union of a very high proportion of the grafts with involvement of the iris and partial opacification of the graft as the commonest complications Rabbits are still mostly used as the subject of experiments though it is possible that some mammal in which the ratio of the area of sclera to the area of cornea approximates more nearly to the human type would yield better results The notable successes of Tudor Thomas on rabbits show that even in the more difficult types of eye perfectly transparent grafts can be obtained Workers with human material continue to get results which are encouraging if not as spectacular as the popular press would have us believe The operation will certainly restore in a high percentage of cases sufficient sight to enable a patient whose vision may have been reduced to perception of light to get about unaided and in some cases even to read again The results appear to vary between 3/60 and 6/18 for distant vision but this must of course depend not only on the transparency of the cornea but also on the functional efficiency of the other parts of the eye

It is obvious that with further improvement in the technique the operation will come to have a wider and wider field Filatov has pointed out that of the 234,000 persons in the U S S R known to be blind in 1932 43 per cent had lost their sight from opacities of the cornea of which a large number are suitable for operation There is no doubt therefore of the need and this brings us to the two main problems of the present time namely the supply of grafts and the best method of inserting them Supply is difficult since only human material is suitable Elschnig Imre Tudor Thomas, Rycroft, and most other workers at the present time use corneas from eyes excised for injury or for disease (other than infective) of the back of the bulb The supply of such eyes is naturally both limited in quantity and incalculable in time and place of opportunity so that of the scanty material available much must unavoidably be wasted Filatov[2] has performed the operation in 95 cases using human material taken from the eyes of cadavers often many hours after death and preserved at low temperatures for periods up to 56 hours The results afford proof beyond doubt that such grafts will unite quite as well as those taken from freshly excised living eyes There was not a single case of necrosis of the graft Further figures are perhaps desirable in order to assess the final transparency of the grafts which may well depend on operative technique and after treatment quite as much as on the source of the material

The question of the type of operation is still to be decided The main uncertainties concern the best size of the graft the method of keeping it in position (sutures or conjunctival flaps or contact glasses and how applied), and the use of various solutions (e g oils Ringer's solution weak antiseptics) in the process All that can be said at present is that though each worker is apt to advocate his own method with enthusiasm the results obtained appear to be fairly uniform The difficulty of assessing and comparing them accurately could be removed if workers would classify them according to a common plan, for example that outlined by Tudor Thomas,[1] and would report not only the successful cases but the proportion of successes to attempts This is the more desirable because corneal transplanting is beginning to yield encouraging results, and Filatov's demonstration that cadaver eyes can be used will doubtless extend its scope Further experiment is however needed since though there is now no difficulty in getting a graft to take, it is still impossible to ensure that it will remain clear

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[1] Thomas J W Tudor *Brit med J* 1937 1 114

[2] Filatov V P *Lancet* 193 1 1395

LORD NUFFIELD AS APOTHECARY

On Tuesday afternoon Dr A P Gibbons, as his last official act of mastership, conferred the honorary freedom of the Society of Apothecaries of London upon Lord Nuffield, the certificate being handed to him in a casket of cedarwood Dr E W Ainley Walker, who presented Lord Nuffield to the Master, spoke of the time and thought he had given to the alleviation of suffering and the improvement of the health and well being of the less favoured of his fellow countrymen "We, of the Art and Mystery of the Apothecaries of London," said Dr Walker, "regarding ourselves as the representatives of the general practitioner and family doctor, on whom the responsibility for the health of the people ultimately rests, have offered him the highest distinction it is in our power to bestow" And at the court dinner on the same evening, when Lord Nuffield replied to the toast of "Our new Honorary Freeman," he said he proposed, as far as in him lay, to continue to help medicine and surgery, and, he added to help the teaching that goes to bring about their progress There is something heartening in the thought of Lord Nuffield as an apothecary For three centuries and more the apothecary has been the prototype of the general practitioner Physicians and surgeons have had their charters, but time and again the apothecaries have gained praise for their charity And the new freeman is helping to level out what Prof John Hilton has called our social and economic pyramid A few days ago was announced his gift of £50,000 to Pembroke College, Oxford, to enable poor and deserving students to enter the college, special regard being had to the needs of those who propose to study medicine In Tuesday's *Times* Prof Hilton restated the facts that there is much fine talent among sons of working class folk, and that a large proportion of these highly talented stand no chance of educational advancement, despite existing educational ladders It is no use, he said providing more ladders to the top unless the top is flattened These facts have been there all the time for anyone to take up, but they have made no stir His own angry reaction to them, although he writes regretting his anger, has now made a stir Lord Nuffield is helping to put the matter right as far as medicine is concerned

STATIC ELECTRICITY IN OPERATING THEATRES

The explosion of anæsthetic mixtures is a risk that still awaits complete solution, and, at the request of the joint anæsthetics committee of the Medical Research Council and the Royal Society of Medicine, the National Physical Laboratory has been giving attention to the electrification of equipment used in operating theatres The director of this laboratory invited [1] superintendents of hospitals to ascertain from operating theatre staffs their experience of sparking from the movement of blankets, mattresses and the like, and in this and other ways a good deal of corroborative information has reached the laboratory from hospital superintendents The work has now been completed and the results show that it is frequently possible by the friction of such coverings to generate electricity of an intensity sufficient to ignite or discharge a mixture of ether and oxygen The accumulation of an electric charge depends upon some part of the equipment being insulated, and the rubber wheels of trolley couches, tables, chairs, anæsthetic apparatus, and operating tables may provide this insulation A simple method of preventing its accumulation is to earth the metallic parts of the equipment by a few inches of light chain trailing on the floor The granolithic type of flooring generally found in operating theatres, though having a high electrical resistance, has nevertheless sufficient conductivity to dissipate rapidly any electrification of a static character Another method which promises to be valuable is to use electrically conducting rubber for tyres, tubing, and breathing bags An account of the work carried out at the laboratory is to be given by Mr E H, Rayner, D Sc, before the Institution of Electrical Engineers, but the director has asked us to call attention now to the methods which can be adopted for minimising the risks Dr Rayner has already pointed out elsewhere [2] that static electricity is unlikely to be a danger as long as the atmosphere of the operating theatre has a relative humidity of at least 65 per cent It seems that in America, where the air in the theatre is likely to become much drier than this when the outside temperature is very low, the danger from static electricity is more of an everyday experience and has stimulated the movement to condition the air in the theatres

PARAGANGLIOMA

In a case of paraganglioma, Beer, King, and Prinzmetal [3] claim to have demonstrated a pressor substance in the blood during hypertensive crises Their patient, a woman of 26, was admitted to hospital with a long history of hypertensive attacks She had previously had a subtotal thyroidectomy without relief, on an erroneous diagnosis of hyperthyroidism The nature of the attacks was confirmed by repeated blood pressure readings during her stay in hospital, and the tumour was successfully removed During an attack in which the systolic blood pressure rose to over 300 mm Hg, some blood was taken from a vein and the plasma used, with a control plasma, for perfusion of the denervated ear of a rabbit The perfusion was started with the control plasma and after the pressure as shown by a manometer had become steady the patient's plasma was substituted This process was repeated three times, and on each occasion the patient's plasma produced a pronounced rise of pressure This effect could no longer be produced after the ear had been perfused with a 1 300,000 solution of ergotamine tartrate These observations suggest the presence of adrenaline or an adrenaline like body in the circulating blood, and support the clinical theories as to the nature of the tumour After the tumour (which weighed 290 grammes) had been removed the perfusion experiment was repeated and it was found that the pressor substance could no longer be demonstrated in the plasma There were no more hypertensive attacks from the day of the operation

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[1] *Lancet* 1935 2 1327

[2] *Lancet* 1936 2 1408

[3] Beer E King F J and Prinzmetal M *Ann Surg* July 1937 p 85

SPECIAL ARTICLES

THE GENETICS OF CANCER IN THE MOUSE

By P A Gorer, B Sc Lond, M.R C S Eng

(From the Lister Institute London)

Since cancer is such a mysterious disease and for many years no external cause could be discovered many people thought that this would have to be sought within the organism itself and thus an intrinsic hereditary cause was postulated.

Nowadays only those with an extremely superficial knowledge of genetics regard heredity and environment as two mutually exclusive causes There are, of course, certain morbid traits only found in individuals of a certain genetic constitution which appear to be unmodifiable by changing the environment Under these conditions it is customary to speak of the disease as due to heredity but it must be remembered that these are really limiting cases So far as cancer is concerned we must regard genetic factors as influencing the sensitivity of the organism to carcinogenic agents occurring either in the external environment or as in the case of mammary cancer apparently produced by the organism itself.

It is not necessary to examine in great detail the means by which geneticists reached the conclusion that susceptibility to mammary cancer in the mouse was subject to genetic variation but it is essential to understand some of the difficulties underlying the genetical analysis and to show how these were partially overcome. The fact that cancer arises late in life is not the major difficulty If cancer in the mouse always occurred between the 12th and 14th month it would not be very difficult to obtain a fairly accurate estimate of the genetic basis. The great difficulty lies in the fact that there is apparently no upper limit to the cancer age suppose we have three mice of which one dies of mammary cancer 6 months old, the second dies cancer free at 15 months and the third dies of mammary cancer at 2 years, what can we say of the genetic constitution of the cancer free mouse? This difficulty would appear to be insuperable we are obviously dealing with a very complex interaction of heredity and environment At the present stage of our knowledge of the pathology of cancer it is not possible to standardise the environment but by developments in the theory and practice of inbreeding it is possible to obtain a very fair standardisation of genetic material Numerous systems of inbreeding have been studied but only brother sister inbreeding need concern us here Inbreeding tends to increase the number of genes for which animals are homozygous and it is possible to show that a very close approximation to a genetically homogeneous population can be obtained after from 20–30 generations of brother-sister inbreeding Some of the limitations of the theory have recently been considered by Haldane (1936) but provided inbreeding is not relaxed selection will tend to keep the line homogeneous for all genes affecting the character selected Strong (1934) has studied the cancer incidence in a line that had been brother-sister inbred for over 20 generations In the breeding females mammary tumours were found to occur at ages varying from about 4 months to [illegible] years Strong deliberately tried to separate sub lines by selective breeding from animals developing tumours at each of these extremes but such selection had no effect. Furthermore Strong (1936) and others have shown that genetically pure stocks do not fall sharply into two groups as far as mammary cancer is concerned and that it is possible to obtain such strains in which the mammary cancer incidence may take almost any value from 0–85 per cent This shows quite clearly that mammary cancer is not due to the action of a single gene

Some years ago Lathrop and Loeb (1918) performed some crosses with strains of mice showing different incidences of mammary tumours They obtained the somewhat surprising result that the incidence in F_1 hybrids tended to resemble that shown by the strain from which the mother was derived. This result appears to have attracted no attention and indeed Bernstein (1930) thought that all the results reported by these authors could be explained on the hypothesis of a single recessive gene for mammary cancer Since work with genetically purified stocks has shown that this view is untenable there is no need to consider it further here

HYBRIDISATION BETWEEN PURE LINES

It was not until 1933 that reports appeared of the results of hybridisation between pure lines The preliminary report (Little 1933) fully confirmed the results obtained by Lathrop and Loeb and since then similar results have been reported by Korteweg (1930 1937) in Holland and by Pybus and Miller (1936) in this country The more important extensions of this work have been made by Little and his colleagues in America.

W S Murray and Little (1935) selected a strain of mice (dilute brown) in which about half the *virgin* females above the age of 8 months died of mammary cancer this strain appeared to be specially suitable for genetic work since about half the deaths in each age-group above 8 months were due to cancer The other strain (C 57 Black) had been brother-sister inbred for ten years and no mammary tumours had been observed a life table showed the ages of death of 240 *breeding* females none of which died of cancer It was found that both the F_1 and F_2 generations derived from the dilute brown female had an incidence of from 35–40 per cent. When the female parent came from the black strain the incidence in both these generations was about 6 per cent In a later paper published in 1936 these authors studied the results of various backcrosses only two of which need be described For convenience the hybrid derived from the dilute brown *female* will be described as the dB F_1 and the reciprocal cross as the Bd.F_1 If the inheritance of susceptibility to mammary cancer is mendelian dB F_1 females backcrossed to black males ought to give offspring with a much lower tumour incidence than Bd.F_1 females crossed to dilute brown males However the reverse was found, and the other backcrosses showed that the incidence of mammary cancer in hybrid generations was not explicable along mendelian lines.

Superficially these results strongly suggest cytoplasmic inheritance a phenomenon well known in plants, but recent work by Bittner and Little (1937) shows that this is not so It was shown that if females from a high cancer line were fostered by mothers from a low cancer line the tumour incidence was much reduced. Little has carried the work further by transferring tubal ova from a high cancer line to the uteri of low cancer females Sixty-one such mice have lived over six months and a number were still living at the time of publication (41 mice with an average age of 11 5 months) and no tumours have developed A few mice from the C 57 Black strain have been fostered by mothers from a high cancer strain and have developed cancer Bittner and Little therefore advanced the hypothesis that "the extra-chromosomal or maternal influence may tentatively be attributed as due to a breast cancer producing influence obtained by the progeny from the milk of high cancer line mothers" This "influence" would probably be described as a virus by many workers, and future work may do much to strengthen this idea, but there are certain facts which are extremely difficult to explain satisfactorily on any hypothesis For example, Bittner (1936) crossed two high cancer strains, with an incidence in breeding females of 60 and 75 per cent respectively When the mother came from the former strain the incidence in F_1 breeders was about 60 per cent, but when the reciprocal cross was performed the incidence was about 80 per cent Furthermore, there is evidence that genetic factors influence the sensitivity of individuals to the milk borne agent Cloudman and Little (1936) showed that if different low cancer males are crossed to the same high cancer female, the incidence in virgin females is different in the two F_1 generations In one such cross the incidence in the F_1 hybrid was actually higher than in the high cancer pure line (77 per cent as contrasted with 50 per cent) For further discussion on this finding the original paper must be consulted Strong (1936) has also obtained evidence that genetic factors are important by selecting four pure lines with widely different tumour incidences from the progeny of one hybrid female that developed 3 mammary tumours

The study of leukæmia throws an interesting light on these problems MacDowell and Richter crossed a pure line with 90 per cent leukæmia to another line with only a sporadic incidence of the disease If the female came from the leukæmic line the incidence in F_1 was about 62 per cent, whilst in the reciprocal cross it was about 42 per cent The existence of extra chromosomal factors was confirmed by backcrossing It was shown that no agent was passed during suckling (see MacDowell 1936, MacDowell and Richter 1935, and Richter and MacDowell 1935) In this case there is no information as to the nature of the maternal influence, and the evidence for the importance of chromosomal factors is rather more clear than is the case with mammary cancer It may be mentioned that cases are known in which extra chromosomal factors appear to be involved but in which the presence of any agent need not be considered—e.g, in the determination of body size

Susceptibility to lung tumours seems definitely to depend upon chromosomal factors Lynch (1926, 1931), whose lines were not as closely inbred as could be desired, gave evidence to show that this was so, and her finding has been confirmed by Bittner and Little It appears as though one or two partially dominant genes have a very marked effect on the incidence of this type of growth

Other types of growth have been less thoroughly studied than those listed above In some cases it may be found that the genetic basis is quite simple, but it is obvious that the theories put forward by Maud Slye (1928 1931) are no longer tenable

SUMMARY AND CONCLUSIONS

1 Genetic factors must be regarded as influencing the sensitivity of the organism to environmental factors capable of initiating malignancy

2 Some of the difficulties involved in an analysis of the genetic factors are pointed out and the necessity for genetically purified stocks is stressed

3 Pure lines of mice can be obtained in which the incidence of mammary tumours may take almost any value from less than 1 per cent to over 80 per cent This fact alone eliminates the hypothesis of a single gene for mammary cancer

4 The differences observed between pure lines cannot be satisfactorily explained along mendelian lines The incidence of mammary cancer is in part determined by an agent passed in the mother's milk during suckling It is probable that chromosomal factors (genes) determine the susceptibility to this agent

5 Leukæmia shows some of the features exhibited by mammary tumours, but no agent is passed during suckling There is strong evidence that chromosomal factors play a part in the incidence of the disease

6 Susceptibility to lung tumours does not appear to be influenced by non chromosomal factors It is probable that one or two partially dominant genes play an important part in the incidence of such growths

7 Other types of growth have not yet been adequately analysed No form of cancer in the mouse has yet been shown to behave as a mendelian recessive

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A MEDICAL CONGRESS IN THE ROCKY MOUNTAINS

(FROM AN OCCASIONAL CORRESPONDENT)

I HAVE referred previously to the difficulties of holding medical conventions in the wide open spaces of the West physicians are scattered so thinly over so vast an area that even a State medical society has trouble in collecting an annual audience large enough to make a good conference In September, 1935, the Colorado State Society adopted a resolution suggesting to its neighbour States of Utah, Wyoming, and New Mexico, that a joint meeting be held in the summer of 1937 The suggestion was approved formally by the medical societies of each of these States, and the first Rocky Mountain Medical Conference has just been held in Denver (July 19th, 20th, and 21st) I was told at the registration desk on the last day of the conference that at that time 780 physicians had registered A list of names and addresses showed that quite a number had come from other than the sponsoring States Kansas was well represented and there were several delegates from Texas and Nebraska If some members of the conference travelled 1000 miles to the meeting at Denver some of the speakers travelled double that distance from New York Baltimore and Washington The highest praise is due to the organising committee for the quality of the lecture programme the excellence *of the scientific exhibits and the clockwork organisation* which started and ended every event exactly on schedule The new film on syphilis prepared by the American Medical Association and the U.S Public Health Service was shown for the first time this side of the Mississippi It is an excellent presentation for medical education and deserves the widest exhibition in medical circles The presence of Surgeon General Parran of the United States Public Health Service at this conference reinforced the teaching of this film He pointed out that 60 000 babies are still born every year with congenital syphilis although we know very well how to prevent this disaster He emphasised also the necessity for using serological tests at every opportunity on all hospital admissions at every physical examination as a routine before marriage and so forth Dr Parran calculates that 1 in every 5 men and 3 in every 5 women are ignorant of the fact that they have syphilis when they get to the doctor s office Only 1 in 4 who start treatment receive sufficient to prevent infectious relapse Prof C C Dennie of the University of Kansas showed some slides illustrating the remarkable success of pyrotherapy as an adjuvant to chemotherapeutic methods in the treatment of syphilis and especially in the treatment of keratitis and other forms of congenital syphilis In the absence of the more expensive apparatus such as is used in Dayton Ohio Dr Dennie has been able to reach his desired goal in body temperature by the use of hot baths

Prof Walter Alvarez (Mayo Clinic Rochester), insisting that 4 out of every 5 cases of indigestion are functional in origin said that the diagnosis of functional disorder should be made from the case history and not by exclusion He told a number of dramatic stories to illustrate how often useless surgery is performed for want of thorough history taking A reaction is very evident in the United States at the present time against over reliance on laboratory reports and a re-emphasis of the classical methods of diagnosis

The second Rocky Mountain Medical Conference is to be held in Utah in 1030

A HUNTER MEMORIAL

A MEMORIAL in honour of William and John Hunter was unveiled at East Kilbride on July 28th by Sir Hector J W Hetherington principal of Glasgow University who paid high tribute to the brothers achievements. The enterprise he said, was begun some years ago when it was thought that to commemorate these great men a visible memorial should be erected in the parish of their birth The brothers differed in opinion but their careers ran strangely parallel courses they were admitted to the Royal Society of London in the same year both did remarkable work for medical science. Both were founders of a great museum and both of them were honoured in the institutions with which their names have become associated

Considered as men of science there was no doubt however that John the younger brother was the greater of the two In experiment and observation he was a man of original and outstanding genius William was also distinguished in science but he was more catholic in learning and taste more varied in his collecting and more firmly attached to his place of origin He was the greatest benefactor the University of Glasgow had known and his collections were the foundation not only of the Hunterian Museum itself but of many collections associated with different departments of science in the University

The memorial is to be placed in the charge of the

[Photograph by Hugh F Dee

Fifth District Council of Lanarkshire The work is by Mr Benno Schotz, A R S A , and it is about ten feet high and eight feet broad. It bears a symbolic relief carving, with a bronze panel containing the following inscription, "To the memory of William Hunter, M D , F R S 1718–1783, and John Hunter, F R S 1726–1793 They were born at Long Calderwood, and died in London after attaining the highest eminence in the sciences of medicine and biology Their names will be held in reverent remembrance by a grateful posterity to all generations "

WELFARE OF THE BLIND

At irregular intervals the Minister of Health publishes reports made to him by his Advisory Committee on the Welfare of the Blind, first appointed in December, 1917 The twelfth of these reports issued this month (H M Stat Office, 6*d*) deals with the work of the committee during its life of three years, and is accompanied by a report (*Ibid* , 3*d*) to them by a subcommittee on home teaching The constitution of the committee is such as to give a balanced opinion on the various problems arising, consisting as it does of nominees of local authorities, persons with special experience of the work, and two representatives of organisations of blind persons

This constitution is of special value in the consideration of such questions as the use of workshops for the blind and the wages of workers, the remuneration of blind workers, and home teaching To the first of these questions a considerable section of the report is devoted, and the result of negotiations with the National Association of Workshops for the Blind and the National League of the Blind is given in some detail. There is general agreement that the workshops should be places of good workmanship and not be mere occupation centres, and that wages should be based on piecework, with generous augmentation, while there should be proper safeguards for low wage earners Somewhat similar questions arise in connexion with home workers, and the committee regret that some local authorities have not seen fit to deal with their augmentation in a more generous spirit

INCIDENCE AND PREVENTION

Till recently information of the incidence of blindness was incomplete, and at least a part of the increase in the numbers given in the Table on p 12 of the report is due to improved registration The increase there shown is from 25,840 in 1919 to 67,534 (1 in 603 of the population) in 1936 The analysis of the age distribution in 1932 and 1936 shows a considerable fall in the numbers at ages below 40 years and a large part of the rise in the 40–50 years group is attributed to the passing of war blinded persons to the next higher group, viz , increase only at 70 years and over Even more satisfactory information is given in a more detailed Table from 1919 onwards, showing large falls at all ages below 50 years The decrease of blindness in children may be due, it is remarked, to a variety of causes, but undoubtedly the ophthalmia neonatorum regulations have been instrumental to a large extent in reducing the number of cases of blindness due to this disease The committee observe that information is not yet available on which a detailed classification and analysis can be made of the causes of blindness, and attention is directed to the investigation being made by a standing committee of the Union of Counties Association which is examining the certificates of notification framed on the detailed form issued by them

The Minister of Health has also issued a memorandum (Circular 1621, dated August 6th, 1937) dealing with the prevention of blindness under various headings He refers to the wide powers possessed by local authorities for the treatment of persons, including those with any disease of and injury to the eyes, and observes that from Oct 1st next when the Public Health Act, 1936, comes into operation formal consent of the Minister to arrangements for treatment will no longer be required The proposals in the circular are based on the report of the standing committee already mentioned, and deal with antenatal services, ophthalmia neonatorum, children under and over school age, infectious diseases, venereal diseases and accidents In the circular is included a model scheme, the basis of which is voluntary notification of the occurrence of cases at a fee of 2*s* 6*d* or such other sum as the local authority may determine, and subsequent care and treatment on behalf of the authority Two points of detail mentioned are prophylactic drops in the eyes of infants and appropriate forms of instruction for myopic children As regards the former the committee are not prepared to insist on the need for prophylactic drugs as a routine measure and consider that the proper cleansing of the baby's eyes at birth is the first essential On the second point, the committee would like to see further inquiry into the influence of myopia in causing blindness and the part played by the special school for partially sighted children in preventing such blindness

PENSIONS AND EMPLOYMENT

The annual expenditure of local authorities under the Blind Persons Act, 1920, which has been slightly over £1,000,000 in each of the last three years works out at £16 per blind person This amount does not include the old age pensions payable to blind persons over 50 Satisfaction is expressed at the Minister's announcement of September, 1936, to give effect to the proposed reduction of the age from 50 years to 40 years, and it is hoped that the arrangement whereby pensions officers keep in touch with local authorities will obviate difficulties which have arisen in the past from conflict between decisions as to blindness for old age pensions and for registration purposes The central consultative committee are continuing their activities on behalf of the deaf blind and, with a view to obtaining guidance in ways of making suitable provision for them, have placed an organiser in the northern counties area to survey the position, his salary being paid out of a grant from the National Institute for the Blind

Progress is being made with the provision of talking books , 600 machines of the gramophone type with discs running at 24 revolutions per minute are already in use and 50 books have been produced by the sound recording committee of the National Institute for the Blind, of which Sir Ian Fraser is chairman Generous contributions have been received from various sources, including £35,000 (14 half yearly gifts of £2500) from Lord Nuffield Further experiments are being conducted out of these funds with a view to finding the most suitable form of reproduction , a film form has definite advantages in portability and wear Meanwhile gramophone talking books can be purchased for £5 10*s* (electrically driven) or £3 10*s* (mechanical machines) The books are lent from the talking book library, which has 40 records from the United States, in addition to the 50 mentioned above By arrangement with the Post Office a talking book weighing 11 lb can be sent by post for twopence

MEDICINE AND THE LAW

Manslaughter by Dangerous Driving

SUICIDES who take their lives by jumping from a height probably do not take account of the injuries they may inflict on innocent passers-by At a Paddington inquest a fortnight ago it was found that a woman who jumped to her death from the upper floor of buildings at the back of New Oxford-street had struck a young man of 18 who was walking along the pavement He died in hospital a few hours later Mr Ingleby Oddie sensibly refrained from recording a verdict of murder though in the textbooks there is much which would justify such a course In R v Hopwood (1913) it was established that, if a man fires at himself with intent to commit suicide and kills somebody else it is murder

Killing without intention, while doing some other act may be either homicide by misadventure manslaughter or murder according to the nature of the act A man is working with a hatchet the head flies off by accident and kills a bystander this is homicide by misadventure A man shoots at his neighbour's poultry intending to steal them and kills a neighbour this is murder because the killing occurs in the course of committing a felony If he shoots at the poultry without that intent and kills his neighbour it is merely manslaughter because his act was unlawful but not felonious The law of constructive murder had its classic exposition in R v Beard (1920) a case referred to last month in the Court of Criminal Appeal when counsel for an appellant tried in vain to argue that the law was becoming more lenient The jury found that Beard while committing the felony of rape choked his victim to death by putting his fingers on her throat to keep her quiet Perhaps the most frequent occasion for considering constructive murder or manslaughter arises where death follows a criminal abortion Judges usually tell the jury that if they think the deceased woman died as a result of the prisoner's unlawful operation, it is murder if they think the prisoner could not reasonably have expected death to result, they may find a verdict of manslaughter

Mr Ingleby Oddie was the more inclined to rule out the verdict of constructive murder because the similar principle of constructive manslaughter is so little applied in cases of dangerous driving Almost every day he said *somebody is killed by a motorist* who is driving dangerously Anybody driving to the public danger is committing an unlawful act; if he causes death by dangerous driving it might be supposed that he would be found guilty of manslaughter Yet it frequently happens that no charge of manslaughter is made in these cases of homicide; the driver is charged with dangerous driving and is punished for that offence although in strict law it is manslaughter

The relation of manslaughter and dangerous driving is discussed in the current *Law Quarterly Review* in an able article by Mr Patrick Dean Mr Dean points out the difficulties which arise because of the many grades of negligence punishable under the Road Traffic Act He shows that lately in Andrews v Director of Public Prosecutions the House of Lords had a rare chance to clear away doubts yet failed to use it Under Section 11 of the Road Traffic Act of 1930 it is an offence to drive a motor vehicle on a road recklessly or at a speed or in a manner which is dangerous to the public having regard to all the circumstances of the case including the nature condition and use of the road and the amount of traffic which is actually at the time (or might reasonably be expected to be) on the road This rather cumbrous section is plainly more serious than driving ' without due care or attention or without reasonable consideration for other people using the road ' which is an offence under Section 12 of the Act In the Andrews case the following question arose Suppose that a motorist is driving in such a manner that if no death occurred he would have been convicted under Section 11 Now suppose that death does occur is the fact that the motorist's manner of driving was unlawful (as contravening Section 11) enough to require a conviction of manslaughter ? Lord Atkin said that on the trial of a motorist for manslaughter (when, under Section 34 of the Road Traffic Act 1934 the jury may convict of the lesser offence of dangerous driving) the judge ought first to direct the jury as to the high degree of negligence necessary for manslaughter he ought next to explain that this is not necessarily the same degree of negligence as is required for the offence of dangerous driving thirdly he ought to indicate the conditions under which the jury may acquit the driver of the more serious, and convict him of the less serious offence As Mr Dean observes this omits to tell us what those conditions are We are no wiser as to the difference between the degree of negligence which is an ingredient in dangerous driving and the degree of negligence which amounts to manslaughter Lord Atkin referred to R v Bateman (1925) which was a question of professional negligence Lord Hewart's judgment in the Bateman case threw much light upon the difference between the standards of civil and criminal negligence but was not concerned to analyse the negligence of motorists Mr Dean would have liked more light upon the mental element in manslaughter and its relation to the mental element in other offences He suggests that this question is suitable for consideration by the Lord Chancellor's Law Revision Committee It would certainly seem that the judges owe us a clarification of the law they have befogged us with a wide range of epithets applied to negligence— wicked culpable criminal "gross, clear and complete"

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE MILK QUESTION

IN his annual report on the health of his county Dr J A Musgrave county medical officer of health for Louth devotes some space to the consideration of milk from the point of view of health He states that poor people do not drink it to any extent not because it is expensive but because being a drink it is not regarded as a food while money is spent on heavier foods of much less nutritional value He cannot at present join in the Drink More Milk campaign because the purity of the milk-supply is not yet guaranteed Bovine tuberculosis is still a menace in Ireland whereas in countries where severe legislation in regard to milk is enforced it is said to have almost disappeared Efficient veterinary inspection is essential to eliminate the dangers of tuberculosis and the strictest regard to an adequate code is necessary to ensure cleanliness Both are provided for in the Milk and Dairies Act. If a scheme of regular sampling of milk-supplies entering urban areas were adopted it would have a good effect. Notwithstanding the improvement in the cleanliness of dairies in recent years the death rate from non pulmonary tuberculosis remained constant, while the pulmonary rate had fallen In Dr Musgrave's opinion pasteurisation was at present the only way to guarantee an absolutely safe milk supply He urged that the provisions of the Milk and Dairies Act should be rigorously applied "If we take an easy line and operate the new Act without reasonable stringency, there will be just as much irritation, opposition, and friction, and no other result save a waste of public money"

Synchronously with the publication of Dr Musgrave's report, the Society of Medical Officers of Health of the Irish Free State has been drawing timely attention to the danger to health arising from the present methods of working the creameries This danger was the subject of comment in the Dáil while the Milk and Dairies Bill was under discussion but was pooh poohed by the Minister The resolution of the Society of Medical Officers of Health draws the attention of the departments concerned to the danger arising from the present method of dealing with skim milk by the creameries throughout the country The milk from the suppliers to a creamery is mixed in the creamery and, after the cream has been separated, the skim is returned to the various suppliers without pasteurisation

"It is certain," so runs the resolution, "that some tuberculous milk reaches each creamery, and, thus it is probable that a large number of suppliers will receive back skim milk infected with tubercle bacilli The high incidence of tuberculosis in pigs slaughtered for bacon at the age of about seven months proves that the pigs were exposed to gross infection from tubercle bacilli, and it seems certain that the vehicle of infection was the skim on which they were fed We would point out to the Department of Local Government and Public Health the gravity of this matter and ask that steps be taken to enforce the pasteurisation of skim milk in the creameries"

IRISH FREE STATE MEDICAL REGISTRATION COUNCIL

Dr Robert J Rowlette and Mr William Doolin, the only candidates nominated, have been re elected as direct representatives of the registered practitioners on the Irish Free State Medical Registration Council for the period of five years from Oct 24th, 1937

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM F R C S (1936)

III

To write of engagements one week and divorce the next suggests that frivolous attitude towards marriage which was strongly deplored by both proposers and opposers in the recent debates on the Matrimonial Causes Bill An introductory denial of any such feeling is therefore apposite During its early days in the House of Lords the Bill looked as though it might produce a professional line up and result in a three cornered tilt between the learned professions there represented From this point of view unhappily there was a lack of team spirit amongst the lawyers and the clergy, and official medicine alone presented an unbroken front A legal or clerical partisan might well say that in a debating team of one it would be hard to contrive it otherwise, and the answer would be that the leader of the Lords Spiritual showed that it was easily within his powers to afford lukewarm support for Clause 1 in its original 5 year form, oppose its reduction to 3 years, vote for its complete abolition and to announce a general policy of abstention on the Bill In the face of such versatility it is a matter of greater regret that medical representation in the House of Lords is limited to that very eminent and busy minority whose attendances can only take place at the sacrifice of professional work which in any case precludes continuous political activity

Mr Herbert's Bill provides an excellent example of that type of legislation on which medical opinion is at least as necessary and pertinent as that of the Lords Spiritual The admission of, say, the honorary physicians to His Majesty as temporary Lords Medical would add lasting catholicity to that heterogeneous seven hundred and in no way lower the standard of oratory

* * *

A closer study of the Matrimonial Causes Bill itself will no doubt clear up many points of uncertainty left by the reports in the lay press, as it is difficult to believe that Mr Herbert would leave obscure the definition of the specifically mentioned medical conditions Nevertheless those clauses dealing with medical conditions justified a more technical debate than they obtained It was inevitable that such attention would be largely focused on the clause permitting insanity of five years' standing as a ground for divorce, and this opportunity was not missed by those peers who held views of their own on the ætiology and treatment of the psychoses On this question adequate reports were obtainable and it is rather regarding the annulment clauses for which one awaits the opportunity to read the Bill for further enlightenment How for example is epilepsy defined? It is difficult to conceive a definition of "idiopathic" epilepsy which would be practicable for this purpose and from reports it is not possible to learn if it is the intention of the Bill to exclude symptomatic epilepsy The presumption is that it is meant to be excluded, or the anomalous position could arise of for example one case of cerebral tumour being liable to annulment of marriage on account of fits while a second whose neoplasm presented as a hemiplegia would be subject to no such penalty

* * *

It is even less easy to gauge the exact position regarding the clause which includes venereal disease present before marriage and unknown to the innocent party, as a cause for annulment Here there is plenty of room for speculation Is a soft chancre or scabies contracted during sexual intercourse as good grounds for annulment as a condyloma or a urethritis? Nor is it easy to understand the inclusion of this clause in a 1937 Bill, it would seem to denote an attitude towards venereal disease which is more superstitious than medical Even supposing the marriage has taken place during an infective period there can be little social benefit in separating two infected individuals compulsory treatment would deal with the situation better Technical points, one can feel certain are more than adequately defined in this Bill but it is to be regretted that informed debate on the medical aspects seems to have been left to one Member of the House In such matters adequate representation of the medical profession is perhaps more necessary in the House of Lords than the Commons The Lords have shown that on such social issues as arouse the opposition of organised minorities their imperviousness to the votes of the electorate makes them the more progressive of the two houses and the future may constantly present us with the picture that Lord Ponsonby found so diverting of the Lords liberalising a die hard Commons measure By so doing they rectify a defect in the democratic system which allows a fear of alienating the voter to impede the progress of necessary legislation It is thus rather to the Lords to whom we must look in hope however faint for the Bill which will abolish the cyclist from the high roads and confine him to special tracks There are no obvious grounds for urging full medical representation during the presentation of such a Bill but it is a melancholy thought that the initiation of such spacious legislation rests so largely on the law and even on the brutal and licentious soldiery rather than on the medical profession

* * *

At the conclusion of the Wembley exhibition British supremacy in the European field had been clearly established in respect of amusement parks A visit to Paris in 1937 makes it clear that that dominant position remains unchallenged The Paris exhibition provides the spectator with a design almost perfect for the best display of the beauties of that city of its Seine and of its Eiffel Tower It is the Tower which captures the attention and dominates this exhibition as it did that of its origin From the Trocadero across the fountains the Seine, and the flanking pavilions it stands an unforgettable picture of architectural grace and beauty It is the attribute which gives coherence and character to the whole lovely design and the odd thing is that the French apparently find it as satisfying as the stranger and give it and the pavilions an avid attention which is at home reserved for the amusement park The pavilions themselves are as varied in quality as in nature and it is the smaller countries—Belgium Denmark Holland—who have best mastered the art of displaying their industrial resources and natural beauties without obtrusive propaganda Of the totalitarian States the massive German pavilion makes a good flank to the vista from the Trocadero On its tower a slightly self-conscious eagle half turns its head from the agitated challenge flung across the avenue by the two proletarian figures occupying a similar position on the U S S R pavilion which has been nicely placed immediately opposite Germany s neighbour on the right is Spain with its chief exhibit Picasso s nightmare conception of Guernica A happy spirit of camaradie can be expected to envelop this corner of the exhibition after hours

* * *

The British pavilion clearly illustrates that the amusement park might have been twice as elaborated without injury to our island reputation as the country where *le sport* is best appreciated This pavilion has been the target of a quantity of misconceived criticism There are those who would have had it a composite British Industries Fair and others would have looked forward to seeing it constitute a testament to democracy challenging the rival political creeds of neighbouring pavilions The organisers can be congratulated on their grasp of the political situation and the manner in which they have solved the problem before them Of recent years there has been a growth abroad of the impression that the Englishman was starting to take things seriously was indeed ceasing to be an amateur If this calumny has not quite been killed at birth it can at least be expected to perish instantly in the minds of all Frenchmen who visit the exhibition Numbed by seried models of German machinery endless photographs of Stalin, repeated statistics of Russia s cultural development and examples of Italian heavy industries the weary brain is jolted to activity immediately on entry into the British main hall. Here all round the walls are tennis rackets rods cricket bats, saddles golf clubs crops hockey sticks and croquet mallets Gamage s window has been reproduced with startling similitude With mental refreshment comes the reassurance that our amateur status is secure and likely to remain so Although there are some agricultural implements in the basement one feels that they are only for use by gentleman farmers

PUBLIC HEALTH

Steps Towards National Fitness

By introducing their Physical Training and Recreation Act and by appointing a national council and a grants committee to assist in carrying it out the present Government has given further practical proof of its determination to do all it can to promote physical fitness in persons of all ages throughout the country Certain measures are to be embarked upon immediately and these are summarised in a booklet entitled National Fitness The First Steps (H M. Stat Office Pp 24 *2d*) Twenty two area committees who should be in action by Oct 1st will supervise the working of the Act in all parts of England and Wales Through them grants ranging according to local economic conditions from 25 75 per cent of the total capital outlay involved will be made to finance the provision of playing fields running and cycling tracks hostels for hikers and cyclists camping grounds and swimming baths community centres for indoor games gymnastics, and physical training Except in cases of special hardship the costs of maintenance will devolve upon voluntary organisations or upon education or other local authorities but the latter are given powers by the Act which will enable them to meet these costs. A national college is to be instituted where courses of varying length will be held for part or full time teachers of physical training and as an experiment education authorities and voluntary organisations will be given financial help for a limited period towards the salaries of such teachers where full employment can be found for them. The success or otherwise of these measures must ultimately depend upon the amount of support accorded to them by public opinion and suitable propaganda will help to develop it If sufficient support is forthcoming—and there seems no reason to suppose that it will not—the expenditure of money and effort should show a return in national efficiency and personal happiness

The L C C Ambulance Service for Accidents

The account of the ambulance service provided by the L.C C for accidents in streets and public places for the year 1936 supplies a record of progressive and efficient administration It will be recalled that the passage of the Metropolitan Ambulances Act of 1909 received little encouragement, in its earlier stages, from the House of Lords, the Home Office, or the police, and indeed for some years after it was placed on the Statute book the Council refrained from putting the Act into operation There are now 16 ambulance stations served by 25 motor ambulances, and in an average time of less than 7 minutes from the receipt of a call an ambulance is at the site of the accident Over 53,000 calls were received during 1936 as against 40,638 in 1932 Calls were most frequent between the hours of noon and 2 P M and between 6 and 8 P M , and more calls were received on Saturdays than on any other day of the week The Bloomsbury station was that most frequently called into requisition, but Lambeth and Westminster appear to have been the areas in which the greatest number of accidents occurred The service is available not only for cases of sudden illness but also for cases of parturition, and calls for these emergencies represent a considerable number of the total requisitions Over 18,000 summonses for the ambulances were received from the Metropolitan Police, and nearly 26,000 from members of the public who are evidently becoming aware of the excellent service at their disposal The destinations to which the victims of accident are conveyed is of interest Last year 19,342 were taken to London voluntary hospitals and 26,291 to L C C hospitals or municipal institutions, of the latter St James' Hospital, Balham, and the Lewisham Hospital claimed the largest number of admissions Only those who recall the methods employed in conveying injured and sick persons to hospitals before the institution of this beneficent municipal service can realise the amount of risk, suffering, and dangerous delay that is now saved

The Supply of Measles Serum

The efficacy of a timely injection of serum from a measles convalescent or from an adult who has had measles in preventing or attenuating an attack has been proved, and it is clear that its efficient use may reduce the mortality during an epidemic and the debility following severe attacks, besides removing much of the anxiety and inconvenience to which an outbreak gives rise in a school, a children's hospital, or other institution The supply of convalescent serum is limited and likely to remain so, as it is inadvisable to bleed very young children, many parents are unwilling to have blood taken from their children for the treatment of strangers Fortunately the serum of young adults who have had measles within ten years has proved nearly as effective and, unless placental extract ultimately supplants it, such adult serum will remain our main source of antibodies It is obviously desirable that this serum should be readily available throughout the country for use as soon as an epidemic occurs There is no need for the blood of the donor and the recipient to be of the same group, so that the blood of a child's parents or of one of the young masters in a school can be used in an emergency In some areas the local authorities have made arrangements for the collection and pooling of serum from volunteers, but this is by no means universal. What is required is some organisation on the lines of the Red Cross transfusion service to supervise collection and distribution, and Dr Elwin Nash, who is medical officer of health for Heston and Isleworth, has suggested that such supervision might well be entrusted to the Boy Scouts Association, the serum being supplied, as it is in his area, by volunteers from among the rover scouts In Dr Nash's opinion it is only in such a movement as this, which carries with it an urge to do things for reasons other than material gain, that there is likely to be an adequate response This association, however, feels that a general scheme should be devised and adopted by the medical profession before deciding to take part in it We commend Dr Nash's suggestion to other members of the public health service

Valuable Labels

Circular 1639 of the Ministry of Health contains facsimiles of the labels issued by foreign governments which carry the state guarantee of inspection and will be accepted in this country as evidence that foodstuffs imported bearing these labels have been inspected at the place of production in a manner which satisfies our rigid requirements, provided the labels are securely attached and have not been altered These labels, which are for meat and meat products, are issued by countries which *guarantee that their* issue is proof that the animals from which the meat was derived were inspected and approved both before and after death, and that all necessary precautions were taken for the prevention of danger to public health *in dressing, preparing, and packing* The recognition of these stamps by the Ministry of Health is an important step forward in our campaign to ensure a safe food-supply which should be known to the public, for it will help to remove certain doubts about foreign meat which are still current, although for some time they have had little foundation The importance of these guarantees is that though disease in carcasses can be detected at any time, pieces of meat, or meat products, may show no detectable signs of disease even if they come from dangerous sources

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 7TH, 1937

Notifications —The following cases of infectious disease were notified during the week Small-pox, 0 , scarlet fever, 1364 , diphtheria, 794 , enteric fever, 47 , pneumonia (primary or influenzal), 373 , puerperal fever, 30 , puerperal pyrexia, 138 , cerebrospinal fever, 19 , acute poliomyelitis, 20 , polioencephalitis, 4 , encephalitis lethargica, 2 , dysentery 10 , ophthalmia neonatorum, 129 No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on August 13th was 2744, which included Scarlet fever 677 diphtheria 666 (diphtheria carriers 23) measles 176 , whooping-cough 470 puerperal fever, 18 mothers (plus 11 babies) encephalitis lethargica 284 poliomyelitis 4 At St Margaret s Hospital there were 23 babies (plus 11 *mothers*) with ophthalmia neonatorum

Deaths —In 124 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 5 (0) from measles, 3 (1) from scarlet fever, 16 (7) from whooping-cough, 20 (1) from diphtheria, 38 (10) from diarrhœa and enteritis under two years, and 9 (2) from influenza The figures in parentheses are those for London itself

Ilford and Southend on Sea reported deaths from enteric fever Diphtheria was fatal in 15 great towns in 3 cases at Birmingham in 2 at Salford and Stanley Liverpool had 6 deaths from diarrhœa Birmingham 4

The number of stillbirths notified during the week was 236 (corresponding to a rate of 38 per 1000 total births), including 36 in London

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SURREY COUNTY HOSPITAL, KINGSTON —It is proposed to convert one of the ward balconies at this hospital into a ward for the accommodation of ten more patients by covering in the balcony with light timber framing with insulated plaster board inside

CORRESPONDENCE

THE BIRTH STIMULUS AND THE SPAWNING STIMULUS

To the Editor of THE LANCET

SIR,—The absence of knowledge regarding the stimulus for parturition in man and other mammals is paralleled by a similar lack of information as to the spawning stimulus in marine invertebrates The two groups of cases are essentially similar mechanically in that evacuation of either the fœtus or the genital products is made from a tube closed by a sphincter; hence it is possible that the operating mechanisms may have other common features and suggestions which apply to one group may at least focus attention to unexpected aspects in the other In this way progress may be made

In recent years many surprising observations have been made on rhythmic breeding in marine animals and upon definite periodicity in spawning—i.e extrusion of genital products in relation to tidal and therefore the moon s phases.[1] Although in some species it is known that flooding with gametes of one sex may induce spawning in the other and that spawning is associated with minimum temperature levels little is known regarding the basic spawning stimulus which is undoubtedly operating For example about 45 per cent. of the mature and maturing female population of oysters (*Ostrea edulis*) spawned simultaneously about June 13th–14th 1936 on the Roach River oyster beds. As even higher proportions may spawn practically simultaneously in other marine species there can be no doubt whatever about the evocation of a common spawning stimulus Among marine animals external as well as internal factors play a part, and all those factors which change with the tide—namely temperature pressure salinity alkalinity light intensity available food emanations from opposite sex and oxygen pressure—may *contribute* towards a spawning stimulus in those individuals which are ready internally to receive it.

I have recently suggested[2] that the most important factor may be the oxygen susceptibility of the gravid individual, for in the course of the development of eggs or sperm oxygen consumption will be high during preparatory and maturing stages probably attaining a peak at maturity In the same way oxygen requirements of the fœtus in mammals will increase to a maximum about the time of parturition It seems likely therefore that in mammals and invertebrates the organism will be hypersensitive to oxygen variation in the late gravid condition. If this susceptibility exists as seems highly probable then here is a trigger state in which oxygen variation may in different ways act upon the appropriate nervous centres to set in train the evacuating mechanism The effect of the stimulus is to cause relaxation of the orifice and contraction or constriction of the tube or tubes. These events must occur in their proper phase to be successful and it would appear that the administration of any drug or preparation which elicits only the contraction phase for example of the uterus may be useless and in some cases definitely harmful

Some phenomena of parturition in mammals as also of spawning in invertebrates appear to be based on oxygen susceptibility but extended investigations are needed to reveal the actual course of events the *practical importance of accurate knowledge* on the subject is sufficient excuse for drawing attention to the possible analogies given above

I am Sir yours faithfully
J H ORTON

The University Liverpool August 13th

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[1] Fox H M (1923) *Proc R Soc B* 95 523

[2] Pelseneer Jubilee Volume *Mém. Mus Hist nat Belg* 1936.

"NO PLACE FOR AN EPILEPTIC BOY

To the Editor of THE LANCET

SIR,—With regard to the article under this title on p 285 of your issue of July 31st it seems to us that the case described is a mental defective and would be certifiable under the Mental Deficiency Acts 1913–27 as a moral defective He would therefore be eligible for admission to any appropriate institution and possibly would be a suitable case for Rampton State Institution.

We are, Sir, yours faithfully
J LLOYD
J N JACOBSON

Fountain Hospital Tooting Grove, S W., August 11th

PASTORAL PSYCHOTHERAPY

To the Editor of THE LANCET

SIR,—This correspondence has certainly called forth some interesting and surprising expressions of opinion and has provided a concrete illustration of the difficulties clinical psychology has to contend with as an important branch of medicine When mental phenomena are the subject of discussion it is obvious that the task of maintaining the purely rational attitude becomes a very difficult one

Dr Batten quietly begs the whole question in asking if only qualified medical men are fit to minister to sick souls Sick bodies we know and sick minds we know but are we to understand that the sick soul is something different from the latter? If so and if as Mr Fletcher claims pastoral psychotherapy is designed to deal with spiritual disorders of the personality to avoid confusion and aid differential diagnosis it would be a great help if we could have a brief description of two or three of these spiritual diseases and some indication as to how to separate them from the ordinary psychological disorders It would, furthermore be less equivocal if the word psychotherapy were given up in this connexion and a distinguishing name like pastoral spiritotherapy used in its place—if the purists would not be too horrified at the hybrid.

Dr Hubble in his admiration for unqualified medical practice makes one wonder if he carries the same admiration into other spheres of life. Does he for instance prefer to have his prescriptions dispensed by an unqualified chemist and does he go to an unqualified solicitor to help him in a legal difficulty? His letter is not without unconscious humour when he describes the patient who underwent complete cure of an anxiety state by a minister of religion as having come easily through her relapse May we be permitted to hope that she will come equally easily through future relapses? Incidentally is an anxiety state a spiritual disorder of the personality?

Cannot an answer to the questions at issue be put quite briefly in saying that as progress in all other departments of medicine has, with one or two exceptions which do not affect the general principle been brought about by strict adherence to the scientific method the high probability is that authentic progress in psychotherapy will be brought about by the same means ? I am, Sir, yours faithfully,

FREDERICK DILLON

Wimpole street W August 15th

To the Editor of THE LANCET

SIR,—Dr Clifford Allen is fortunate in that he finds the ideas of those who oppose him “childish ” He is less fortunate in that his own views have not as yet commanded the representative support of his brother psychotherapists There is but one course for him The Guild, undeterred by his opposition, will continue to sow what he so confidently believes to be tares He will continue to sow what he believes, with equal confidence, to be wheat of the best quality And the harvest ? Those of us who live till 1960 may see Dr Allen attending a demonstration of psychotherapeutic technique by the Reverend So and So, the distinguished psychotherapist, just as the British Orthopædic Association found itself sitting at the feet of Sir Herbert Barker Unfortunately we shall be denied any amusement on that occasion for this sprightly controversy will have long since been forgotten

I am, Sir, yours faithfully,

Derby, August 15th DOUGLAS HUBBLE

To the Editor of THE LANCET

SIR,—A cursory comparison of Dr Clifford Allen’s latest letter with his earlier ones to you will make it apparent that he has effectively denied his own argument Taking to task some of his professional colleagues who have ventured to disagree with him, he accuses them of precisely those mental limitations which in his view, make the clergy unfit to practise psychotherapy Having urged that the physician is by training “detached, unemotional, and scientific,” Dr Allen now discovers in his fellow practitioners “ignorant prejudice” and “a great capacity for drawing conclusions with insufficient evidence to support them”, thus contradicting his earlier *premises*

Dr Allen affirms that psychotherapy is a branch of medicine He seems not to have observed that it is also a branch of psychology “The basic principles which support the whole” are by no means exclusively the principles of physical medicine Indeed, *one could with some cogency argue* that they are essentially philosophical and religious Certainly by his own argument, Dr Allen would have no reason to complain if the philosopher or theologian—and imperatively the metaphysician—should require him to produce evidence of his competence in these sciences, as he would require evidence of medical competence in them before they acknowledged his qualification to undertake the treatment of personality disorders

No good service is done to any point of view by an evasion of the difficulties raised both for religion and medicine by psychotherapeutics Dr Allen affirms his admiration for the church and his respect for the ministries of religion If he is sincere in his desire for a scientifically objective attitude to this matter let him consider the real problem raised for all concerned by the psychophysical nature of human personality Can he provide a definition of psychotherapy that will enable both clergy and doctors to discern where the limitations of both their provinces are in the mutual task of making personalities “whole” bearing in mind the obvious fact that a medical man is no more equipped by his scientific training for the cure of souls than the clergyman is by his training for the cure of bodies ? As I have already tried to show, this is a real and pressing problem that deserves consideration with all the scientific detachment and goodwill at the command of everybody concerned, and I am sure that many beside those who are interested in the Guild of Pastoral Psychotherapy will acknowledge their indebtedness to Dr Allen if he will make a constructive contribution to its solution

In my previous letter I omitted to say that I shall be glad to post copies of the memorandum about this Guild (a perusal of which led Dr Allen to write to you) to any of your readers who will send me a card making the request

I am, Sir, yours faithfully,

A B W FLETCHER,

Hon Sec The Guild of Pastoral Psychotherapy

29 Dorset square London N W 1, August 16th

“BIOCHEMICAL CONTROL OF CANCER”

To the Editor of THE LANCET

SIR,—The recent award of a Civil List pension to Dr Copisarow must be taken to mean that, in some direction, he has done important service to science, with even less reward through normal channels than comes to most research workers His attempt to solve the cancer problem by biochemical speculation must, accordingly, command a certain respect The indication, however, of the nature of his theories, in his letter published in your issue of August 7th, by reference to “oxidation enzymes, the glutathione equilibrium, vitamins E, B_1 B_2, &c ,” does not convey any clear idea , nor is understanding assisted by the claim that “these conclusions” have now been supported by “experimental evidence from various sources,” since much of what is cited has no obvious relevance Possibly a study of Dr Copisarow’s earlier publications might reveal a greater coherence

Of much greater importance, however, than Dr Copisarow’s theoretical speculations, is his statement that he has been led by them to a corrective treatment for cancer, and the suggestion that this also has been supported by the assortment of evidence quoted. The treatment consists of two items (1) the administration of yeast with what is termed an “enzyme-bearing medium, such as unrefined sugar or honey”, and (2) “the injection of certain non toxic sulphur-labile compounds,” of which mustard gas (dichloro diethyl sulphide) is, curiously, quoted as an example One has heard of the simultaneous ingestion of yeast and sugar, as a device for procuring cheaply a thorough alcoholic intoxication, and of the drawback due to the concomitant distension of the stomach with carbon dioxide , but mustard gas, as a “non toxic ’ sulphur derivative suitable for injection,’ is surely a therapeutic novelty It is to be hoped that none of your readers will be so much impressed by the show of theory, and the list of references to experimental evidence cited in its support as to give the suggested treatment a practical trial, without some much clearer and more detailed indication of the way in which its rather obvious disadvantages can be avoided

I am, Sir, yours faithfully,

August 14th BIOCHEMIST

To the Editor of THE LANCET

SIR,—In your issue of August 7th Mr Copisarow refers to the “recent experimental work of several investigators with methylene blue” and gives references to two works published in 1933 As I happened to be particularly interested in this subject at the time these articles appeared I ransacked the London medical libraries for further information and collected some interesting references of which the following are a selection in chronological order :

Einhorn M (1891) *Dtsch med Wschr* **17** 600
— (1891) N Y *med Rec* **39** 358
Mosetig Moorhof R (1892) *Lancet* **1** 414
— (1892) *Wien klin Wschr* **18** 1
— (1896) *Zbl ges Therap Wien* **14** 1
Nanu G (1892) *Münch med Wschr* **42** 1018
d Ambrosio A (1893) *Münch med Wschr* **40** 634
Medical Annual 1893 (review) p 113
Mazot C (1897) *Marseille méd* **34** 304
Slack, H R (1897) *J Amer med. Ass* **28** 1027
Jacobi A (1900) N Y *St J Med* **6** 307
— (1900) *J Amer med Ass* **47** 1545

These forgotten works indicate that methylene blue and methyl violet (pyoktanin) were used in the treatment of cancer prior to radium and no doubt they were put on the shelf when the latter was introduced A study of these articles however should be of considerable interest to those engaged in scientific work on this subject

I am Sir yours faithfully
R PAKENHAM WALSH

County Mental Hospital Lancaster August 6th

UNDESIRED PUBLICITY

To the Editor of THE LANCET

SIR,—What is undesired publicity ? If the effect of the publicity referred to by your correspondent was to induce the belief that the sulphonamide emanated from British brains, it would no doubt be undesired by the German inventors If on the other hand the effect was to raise from obscurity to the light of day a society known as the British Pharmaceutical Conference then I do not suppose the publicity would be undesired by that society It all depends upon the point of view

I am Sir yours faithfully
F C GOODALL

Whitehall place S.W August 11th

To the Editor of THE LANCET

SIR,—One of the most advertised events in the history of the world was King Canute s attempt to stop the tide coming in That ancient ruler has his disciples in many walks of life all of them alas equally unsuccessful If your correspondent Mr T E Lescher aspires to control the newspaper press of this country the task before him is as hopeless as that which King Canute essayed. May I suggest however that it is a simpler matter to control desired publicity than to stop undesired publicity Also as a member of the council of the Pharmaceutical Society of Great Britain under whose ægis the British Pharmaceutical Conference has its being I think it should be placed on record that it is wholly contrary to the wishes of the conference that the fact that the discovery of the sulphonamides was made in Germany by German chemists should be concealed

I am Sir yours faithfully
F W YEOMANS

Sparkhill Birmingham August 10th

*** The sulphonamide group has just been added to the list of synthetic products subject to customs duty at the rate of 33⅓ per cent ad valorem under the Safeguarding of Industries Act —ED L

TAR OR JUST DUST?

To the Editor of THE LANCET

SIR —In the kindly reference in your last issue to my research on the effect of tar dust and dust minus tar upon the incidence of lung tumours in mice rather more emphasis is placed upon the effects of the tar than the results of my research indicate Certainly tar in the dust is an important factor but so is the road dust minus the tar Thus in the controls the percentage with lung tumours is 20 Special dusting with road dust minus tar produces lung tumours in a further 25 per cent of the mice with increase in malignancy while special dusting with road dust containing tar causes an additional effect representing a further increase in incidence in 29 per cent This gives a total of 20 plus 25 plus 29 per cent or 74 per cent with the tar dust but 25 of the 54 per cent increase over the control figure (20) is independent of the tar My opinion as stated in the paper is that road dust minus tar is also an important factor in the ætiology of lung cancer in susceptible individuals and I hold that the presence of lung tumours in the control mice is also due to an irritant inhaled in atmospheric dust which is present everywhere and has to be removed from furniture every day with a duster We are now testing each ingredient of the dust commencing with silica with the view to detecting the carcinogenic factor in the road dust minus tar

My research is concerned mainly with the ætiology of lung tumours and only indirectly with the question as to whether there is or is not a recent increase in human lung cancer Sooner or later the results from experiments on animals will be brought into line with data for human diseases and I hold that already there is much in common as regards pathology and ætiology of lung tumours in mice and men.

Another minor point the metastases with the dust minus tar as recorded in my paper were in the heart and kidney not in the liver as stated in your annotation

I am Sir yours faithfully
J ARGYLL CAMPBELL.

National Institute for Medical Research N W
August 17th

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Lt Comdr W P F MacIntyre to be Surg Comdr

Surg Lt Comdrs A M L Smith to *Victory* for R N B and to *Glasgow* (on commg); T F Barlow to *Dolphin* M A Graham Yooll to *Pembroke* for R N B

Surg Lt Comdr (D) T G A G Emberson to *Norfolk II*

Surg Lt S J Wheeler to be Surg Lt Comdr

Surg Lts P G Stainton to *Victory* for R.M Infirmary Portsmouth ; and J W Caswell to *Victory* for R N B

Surg Lts (D) S. R Wallis to *Caledonia* and F R M Willis to *St Vincent*

To be Surg Lts (D) D C Howe and W G Smith

The following appointments as Admiralty Surgeons and Agents have been approved : Mr C F Fairlie Blyth Mr H P Clark Clacton-on Sea Mr G W Oliphant Bridport ; and Mr T B Miller Glasgow

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt R M Heggie (proby) to *Courageous*

Surg Sub-Lt Gerard Sutherland Irvine promoted to Surg Lt (seny July 30th) and appointed to *Newcastle* (August 2nd)

ROYAL ARMY MEDICAL CORPS

Capt D R W Burbury to be Maj

Short Service Commission Lt (on prob) O Jordan is secd under the prov of Art 213 Royal Warrant for Pay and Promotion 1931

REGULAR ARMY RESERVE OF OFFICERS

Lt Col M B H Ritchie D.S O O B E having attained the age limit of liability to recall ceases to belong to the Res of Off

ARMY DENTAL CORPS

Short Service Commission Lt H M Barbour to be Capt

TERRITORIAL ARMY RESERVE OF OFFICERS

Maj E J G Glass to be Maj

Capts R W Hendry and E J B Sewell, from Active List, to be Capts

ROYAL AIR FORCE

Squadron Leader E Thompson to Home Aircraft Depôt, Henlow

Flight Lt F H Peterson to Central Medical Establishment, London

Flying Offrs D W I Thomas and E J Moynahan promoted to rank of Flight Lts

Flying Offr J D H Cran resigns his short service commission

Dental Branch—Flying Offr A J Clegg to R A.F Station, Andover

INDIAN MEDICAL SERVICE

Maj Genl E A Walker, C B , K H S , retires

Capts to be Majs T A Malone and W T Taylor

Indian Medical Department—Asst Surg (1st Cl) C C G O'Reilly to be Lt (Sen Asst Surg) Lt (Sen Asst Surg) J P Pereira retires

DEATHS IN THE SERVICES

Brevet Colonel **James John Pratt**, whose death occurred in London on August 12th, was a very popular member of the Indian Medical Service A student at Westminster Hospital he graduated M R C S Eng in 1881, and entered the I M S two years later after taking the Herbert prize and the Montefiore medal at the Army Medical School In 1884 he served with the Zhob Valley expedition He was then for a time at the Naini Tal asylum, and from 1890 on he was civil surgeon at various stations in the United Provinces, and later at Lucknow, where he was medical officer to the volunteer rifles Retiring in December, 1912, he was appointed examiner of surgical instruments to the India Store Depôt, and was given charge of beds at the Seamen's Hospital Society, lecturing on tropical diseases at the Westminster Hospital and the London School of Tropical Medicine During this long period he was one of the most regular attenders of the annual dinner in London of the I M S where his voice was often heard

Col **Thomas Evelyn Fielding**, whose death occurred at Hindhead on August 9th, was born in 1873, and educated at Trinity College, Dublin, where he qualified in medicine in 1897 He entered the R A.M.C in 1900, and served in the South African war, being mentioned in dispatches and awarded the several medals In the European war he was assistant director of medical services first to the 3rd Division and later to the 28th, commanding a field ambulance and a general hospital He was thrice mentioned in dispatches and was awarded the D S O in 1915 He married in 1913 Isabel Orpen, daughter of Dr Benjamin Palmer, of Newry, co Down

PANEL AND CONTRACT PRACTICE

Refresher Courses

The Minister of Health has now stated explicitly the conditions under which he will approve grants for post graduate study to insurance practitioners The grants hitherto available for rural practitioners will be continued for the remainder of the present year after which they are to be merged in the larger scheme The conditions of eligibility are now

(*a*) That five years have elapsed since the date of first registrable qualification

(*b*) That the practitioner has not less than 300 (or in the case of a rural practice 150) insured persons on his list

(*c*) That no grant will be payable more than once in five years

The grant will include a fee for the course, travelling and subsistence expenses, and the payment of a whole time locum tenens where necessary For the present year the arrangements will be limited so far as England is concerned to courses, held in September, October, and November, at the British Postgraduate Medical School at Hammersmith or at other institutions associated with it

Another Dental Hæmorrhage

A further case in which an insurance doctor was called in to treat hæmorrhage following dental extraction in the absence of the dentist who pulled out the tooth has come up before an insurance committee, this time in the provinces It will be remembered that in a previous case[1] the practitioner gave the necessary treatment, but as he did not think the treatment ought to be within the scope of medical benefit, which in fact it was, he charged the patient ten shillings In the recent case the patient went to her doctor who on examination found that she was suffering from arterial bleeding He tried packing the socket with cotton wool and adrenaline, and as this was not effective the question of a stitch arose The doctor told the patient that he had not the material for that sort of work and that she must try and find her own or some other dentist, failing which she might apply for treatment at a local hospital The patient consulted another doctor who inserted three stitches and made two subsequent visits, one on the following morning and the other a week later, and charged a guinea for his services When he appeared before the medical service sub committee the first practitioner said that even if he had had absorbent catgut by him he would not have tackled the job without assistance (The assistance given to the other practitioner was actually rendered by relatives of the patient) The insurance committee recommended the Minister to withhold two pounds with a view to a corresponding deduction from the practitioner's remuneration, and decided to refund to the patient the sum of one guinea for expenses incurred The practitioner appealed against this decision on the grounds that in his judgment treatment could not in the interests of the patient be properly undertaken in his surgery, and that he had fulfilled his duty to the patient in giving her advice The appeal was heard on May 31st The practitioner said that he himself could not have undertaken to stitch the gum for lack of proper material and adequate assistance He had not in his surgery at the time, though he had procured since, a supply of absorbent catgut which was the only suitable material for the purpose Regarding assistance, the help of another medical man or at least of a trained nurse would have been desirable for swabbing the patient's mouth to expose to view the bleeding point and for preparing for the operation He thought the patient was going direct to hospital from his surgery, but did not give her a note to take with her as the condition was evident The legal representative of the practitioner argued that this was a case to which Clause 9 (1) of the Terms of Service should be applied—i.e , the clause that makes it the doctor's duty to advise the patient as to the steps to be taken in order to obtain treatment not within the scope of the practitioner's obligations It was not contended, however, that the treatment required was outside the practitioner's obligations under the Terms of Service, and the tribunal took the view that the clause invoked therefore could not under any circumstances be relevant There was no provision which enabled the practitioner to discharge his duty by advising the patient as to the steps which she should take in order to obtain treatment which was within the scope of his obligations Clause 11 (1) provides that a practitioner unwilling to render any particular service may make arrangements with a colleague to act as his deputy but it is for him to ensure that there is no breakdown. The Minister on consideration of the report of the appeal tribunal dismissed the appeal

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[1] See *Lancet*, 1936 1 1090 1937 1 345 and 1549

OBITUARY

JOHN GORDON THOMSON M B Edin F R C P Lond

We regret to announce the death on August 13th of Prof J G Thomson director of the department of protozoology at the London School of Hygiene Born at Whitburn, Linlithgowshire in 1878 the son of William Thomson a fellow of the Education Institute of Scotland John Gordon Thomson was educated at the Bathgate Academy and at Edinburgh University where he took his M.A in 1903 Five years later he graduated in medicine after gaining distinction in physiology and acting as prosector to D J Cunningham He spent two years in house appointments at the Camberwell Infirmary and then went to Liverpool as Durning Lawrence research student in tropical medicine He became pathologist to the Royal Southern Hospital honorary assistant physician to the Liverpool Chest Hospital, and Beit memorial research fellow At that time he was contributing to the *Tropical Diseases Bulletin* the sections on malaria and communicating frequently to the proceedings of the Royal Society of Tropical Medicine In one of these he collaborated with Ross on the employment of enumerative methods in another with Faulham on periodic variations in the occurrence of trypanosomes and again with D Thomson on the cultivation of human tumour tissue in vitro In 1914 he was appointed lecturer at the London School of Tropical Medicine but on the outbreak of war was soon sent to Egypt where he specialised in pathology and protozoology at Alexandria He also was engaged in research on the dysenteries prevalent in Gallipoli and a companion of this period writes of his passionate zeal in his task and his indignation against avoidable suffering His devotion made a deep impression on all who were associated with him

Returning to England to take charge of the malaria research laboratory at the War Office he was appointed to the chair of protozoology at Keppel-street when the school was opened in 1918 Here he also undertook the teaching of hæmatology and the pathology of protozoal diseases in man with the aim of grounding the tropical practitioner in the essentials of his work whether as clinician hygienist or laboratory worker This required the collection and maintenance in his department of cultures and strains of spirochætes trypanosomes and other pathogenic and non pathogenic organisms in order to provide a supply of blood films adequate for teaching purposes Nevertheless he was able to continue his expeditions abroad visiting Nyasaland in 1934 when he worked with W A Lamborn on the rôle played by hæmatophagous flies in the transmission of various parasites and conducting a malaria survey on native children In the following year at the request of the League of Nations he visited Singapore to give a series of lectures at the same time collecting valuable material from malaria, yaws and other cases He twice visited Rhodesia where his researches on blackwater fever added to our basic knowledge of this disease and for a time he was exchange lecturer in protozoology at Johns Hopkins His colleagues at the London School valued him for a directness of approach to medical problems and a grasp of essentials which made his advice much sought after and just as was the case during his war service he was universally popular for he never spared himself where he could help others in their work There was in fact latterly as Sir Rickard Christophers has remarked an almost constant succession of visitors of all nationalities to his department

Prof Thomson married Hilda daughter of Mark Burgess of Alderley Edge Cheshire and leaves his widow with a son and daughter

WILLIAM MELROSE CUMMING, M.D St. And

The untimely death is announced of Dr William Cumming lecturer in the department of bacteriology in University College Dundee He succumbed to an attack of pneumonia at the age of 39 Educated at the University of St Andrews he graduated there in medicine in 1922 later taking his M.D and the public health diploma He early interested himself in tuberculosis and held appointments at the Grove Park hospital, at Lee and the Fife and Kinross joint sanatorium His work on pseudohæmolytic streptococci isolated from sputum in pulmonary tuberculosis was published in the *Journal of Pathology and Bacteriology* followed by an account of 14 new English cases of pulmonary tuberculosis due to the bovine type of bacillus More recently he was in charge of the Bradford city sanatorium at Grassington and resigned in order to carry out further research at Dundee His wife died three years ago and he leaves a son and a daughter

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Peasley Cross Isolation Hospital St Helens The Mayor of St Helens has opened a new cubicle block here providing accommodation for 10 patients 5 male and 5 female It is divided into three single cubicle wards with a double ward on each side The glass cubicle system has been adopted

Medical Charitable Society for the West Riding —This society which was started in 1828 held its 109th annual meeting at Harrogate under the presidency of Dr W Edgecombe These meetings are held in rotation at various centres in the West Riding of Yorkshire and the work of the society which helps the widows and other dependants especially the children of deceased members who have been unable to make adequate provision for them is carried out with the coöperation of stewards in the various districts The financial condition of the society is sound the invested funds stand at the nominal value of £55 500 and about £100 000 has been given in grants. The annual subscription is one guinea and the membership is now 1261 At the end of the annual meeting Dr Wardrop Griffith who is retiring from the treasurership after serving for 10 years during which time the membership of the society has gone up from 869 to 1201 was presented by the officers and stewards with an antique silver loving-cup He is succeeded by Mr Harold Collinson to whom communications should now be addressed

MEDICAL NEWS

Medical Society of London

This society has issued its programme for the first half of the session 1937–38 The presidential address on Oct 11th will be given by Mr J E H Roberts on *sick nursing, past, present, and future* On Oct 25th Dr George Graham will open a discussion on treatment by intravenous infusion, to be followed by Mr G Gordon Taylor and Dr H I Coombes On Nov 8th Sir Joseph Barcroft, F R S, Lord Burghley, M P, Dr Adolphe Abrahams, and Mr A E Porritt will take part in a discussion on national physical training And on Dec 13th Mr H W Rodgers, Dr G T Calthrop and Dr S Cochrane Shanks will discuss modern methods of investigating gastric diseases Next year Dr Graham will survey in his Lettsomian lectures the changes and results of treatment in diabetes in the last 15 years, the annual *oration* will be delivered on May 9th by Sir Henry Gauvain on planning a hospital

Chartered Society of Massage and Medical Gymnastics

The annual congress of this society will be held this year from Sept 20th–24th The dinner will take place on Sept 22nd at the Café Royal, Dr James Mennell presiding and the lecture given annually in honour of the founders of the society on Sept 24th This lecture is being given this year by Mr H A T Fairbank on unusual causes of backache At the congress the opening lecture is by Prof G R Girdlestone on the treatment of scoliosis, and the other medical lecturers will include Miss Maud Forrester Brown on physiotherapy in the treatment of injuries, Mr K L Parsons on treatment by manipulation, Mr Lawrence Abel on the surgery of the sympathetic nervous system, Mr J S Yates Bell with Dr S S Cooksey on faradism and pelvic floor exercises for urinary incontinence, Dr A T Todd on the treatment for chronic rheumatism, Dr Noel Harris on hysteria Dr Doris Odlum on psychological factors in physical diseases Mr J H Seddon on the application of occupational therapy to orthopædic conditions, Dr W S C Copeman on chronic rheumatism, Mr A E Porritt on ruptures, ancient and modern, Prof E W Hey Groves on intracapsular fractures, Mr A W Adams on orthopædic and other operations under spinal anæsthesia, Dr J Kalnanson on indications for short wave therapy, Dr Clement Nicory on the importance of the physical therapeutist in preventive medicine, Dr R L Kerr on remedial exercises in the treatment of abnormalities of binocular vision and asthenopia Tickets of admission to any of these lectures will be sent to medical men applying to the secretary of the society at Tavistock House, Tavistock square, London, W C 1

Central London Throat, Nose, and Ear Hospital

The annual address will be given on Oct 8th, 1937, at 4 P M by Sir StClair Thomson on subglottic intrinsic cancer of the larynx

North Devon Hospital

A new nurses' home is shortly to be erected here and the present nurses' accommodation is to be converted into a medical ward and isolation ward for women A special appeal for funds for this purpose will presently be issued

Fellowship of Medicine and Post-Graduate Medical Association

Courses in physiology and in anatomy and embryology in preparation for the F.R C S (primary) examination will be given on Monday, Wednesday, and Friday evenings, at 5 30 P M. and 8 P M respectively from Sept 1st to Nov 22nd Courses suitable for M R C.P and M.D candidates will be as follows clinical and pathological at the National Temperance Hospital, Tuesday and Thursday evenings at 8 P M Sept 7th to 23rd, chest and heart at the Royal Chest Hospital Mondays, Wednesdays, and Fridays at 8 P.M, Sept 13th to Oct 2nd, chest diseases at the Brompton Hospital on two afternoons weekly, at 5 P M from Sept 6th to Oct 2nd, neurology at the West End Hospital for Nervous Diseases in the afternoons from Sept 20th to Oct 2nd A course, suitable for D C H candidates, will be given at the Infants Hospital, occupying the whole of each day from Sept 20th to 25th A two day course in plastic surgery will be given on Wednesday and Thursday, Sept 15th and 16th A course in proctology will be held at the Gordon Hospital from Sept 27th to Oct 2nd, and a week-end course in ophthalmology at the Royal Westminster Ophthalmic Hospital on Saturday and Sunday, Sept 25th and 26th Detailed syllabuses may be obtained from the Fellowship of Medicine at 1, Wimpole street London, W 1 Courses are open only to members

Société Internationale de Chirurgie

The eleventh congress of this society will be held in Vienna from Sept 19th–22nd, 1938, under the presidency of Prof Rudolph Matas of New Orleans

New Hospital for Halesowen

The trustees of Halesowen Cottage Hospital have decided to accept the offer of Mr Somers, president of the hospital and charities committee, to give a portion of the Grange Estate as a site for a more up to date hospital Mr Somers is also giving £10,000 towards the cost of the new building

THE LANCET 100 YEARS AGO

August 19th, 1837, p 751

From an abstract of a report in “The Dublin Journal,” July, of Dr S Bigger's experiments on Transplantation of the Cornea, to relieve Blindness, hitherto deemed incurable

On his return to Dublin, Dr Bigger commenced his experiments anew, of these, he has now performed eighteen The subjects of the first and last experiments, two rabbits were presented before the King and Queen's College of Physicians on the 18th of May last, and the degree of vision, which one of them evidently possessed reflects the highest credit on the operator Of these eighteen experiments, in ten, the iris was injured, in eleven, the crystalline lens escaped, in seventeen, union took place between the implanted corneæ and the adjacent surfaces in forty-eight hours, so as to admit of the withdrawal of the ligatures which are always a great source of irritation, in four, three ligatures were employed, in fourteen, only two, and with equally favourable results in twelve, adhesion of the iris to some part of the cicatrix ensued, in one, sloughing of the cornea and destruction of the eye took place an event which arose from the cornea being kept for half an hour without applying it, with the view of ascertaining how long it would be likely to retain a sufficient degree of vitality to enable it to unite, a delay which may be prejudicial to the operation Of the whole eighteen, sixteen recovered imperfect vision

The difficulty of preserving the transparency of the implanted cornea, was constant until his ninth experiment at home, when Dr Bigger discovered that much benefit might be derived from the local application of bichloride of mercury A weak solution gradually increased to three grains to the ounce of distilled water, dropped into the eye three or four times a day, after the cornea had become adherent, was found to exercise an almost specific action in diminishing the opacity of the implanted cornea Iodine and nitrate of silver had improved the appearance of the cicatrix, but did not act upon the milky state of the cornea The corrosive sublimate must be begun with a weak solution, and not used until the implanted cornea is perfectly united to its new connexions

A footnote to this report says —

The first time Dr Bigger tried this experiment was in 1835 when he was a prisoner with a tribe of Arabs, on a journey from Grand Cairo A pet gazelle had lost one eye from inflammation, and the power of seeing with the other, from a wound of the cornea The cornea was taken from another animal of the same species, brought in wounded but not quite dead, adhesion took place, and in ten days the animal gave unequivocal signs of vision, the upper part of the transplanted cornea remaining perfectly transparent

Appointments

EAGER, RICHARD M D Aberd Consultant in Psychiatry to the Royal Devon and Exeter Hospital

HESLOP J F., M B Manch F R C S Eng Resident Surgical Officer at the Manchester Royal Infirmary

TUXBRIDGE R E M D Leeds M R C P Lond Honorary Physician to the Leeds Public Dispensary and Hospital

WHAGG A. W M R C S Eng Senior Resident Medical Officer to the Taunton and Somerset Hospital

Certifying Surgeons under the Factory and Workshop Acts Dr J GROCOTT (Hanley District Stafford) Dr T J JONES (Talybont District Cardigan)

Vacancies

For further information refer to the advertisement columns

Aberdeen University—Crombie-Ross Lectureship in Psychopathology £[illegible]

Albert Dock Hosp Connaught road E—Res. M O at rate of £110

Barnstaple North Devon Infirmary—Res. M O £150

Bath and Wessex Children's Orthopaedic Hosp Combe Park—H.S. at rate of £130

Birmingham Dudley-road Hosp—Jun M O at rate of £200

Birmingham Royal Cripples Hosp—Res H.S at rate of £200

Bolton Royal Infirmary—H S at rate of £150

Bradford Municipal General Hosp., St Luke's—H.P's and H.S's, each at rate of £150

Brighton New Sussex Hosp for Women, Windlesham-road—Hon Surgeon

Brighton Royal Sussex County Hosp—H S, £150

British Postgraduate Medical School Hammersmith—H.S (Obstetrics), at rate of £105 Also Res Anaesthetist and Cas O each at rate of £150

Caithness County Council—Surgical Specialist £1000

Cambridge Addenbrooke's Hosp—H.S at rate of £130

Canterbury, Kent and Canterbury Hosp—H.S at rate of £125

Cardiff King Edward VII Welsh National Memorial Association—Area Asst Tuber Phys £500 Res. M O £350 Two Asst Res. M.O 's, each £200 Also three Half time Asst. Tuber O 's, each £250

Cardiff Royal Infirmary—H.P's H.S's, and Cas. Surg O each at rate of £50 Also Ophth H.S., at rate of £80

Chelmsford Borough—M O H and School M O, £800

Colchester Royal Eastern Counties Institution &c—Asst M O £400

Derby, Derbyshire Royal Infirmary—Gynaecological H.S and Emergency Anaesthetist, £160 Also H.S., £150

Derbyshire Education Committee—Asst. School M O, £500

Devonport Prince of Wales's Hosp—Sen H.S at rate of £130

Dreadnought Hosp Greenwich S E—H.S and H.P each at rate of £110

Eastbourne, Princess Alice Memorial Hosp—Third Hon Anaesthetist

Glasgow Royal Samaritan Hosp—Visiting Surgeon

Guildford Warren road Hosp—Res. Asst. M O at rate of £375

Halifax Royal Infirmary—Res Surg O £250

Herefordshire General Hosp—H.S and Cas O £100.

Huddersfield Royal Infirmary—Cas O at rate of £200

Ilford Borough.—Asst Dental Surgeon, £450

Jewish Maternity Hosp Underwood street E—Res M O at rate of £50

King Edward Memorial Hosp Ealing—H.S. to Spec. Depts at rate of £150

Kingston-on Thames, Surrey County Hosp—Res Obstetrician £725

Leamington Spa Warneford General Hosp—Res Jun H.S and Cas. O at rate of £150

Leeds City—Asst M O £500

Leeds Hosp for Women.—Hon Anaesthetist

Leicester City Mental Hosp Humberstone.—Deputy Med Supt £800 Also H P, at rate of £300

Leicester Royal Infirmary—Res. Anaesthetist at rate of £160 H.S two H P's Sen Cas O each at rate of £125 Also Jun. Cas. O at rate of £100

Liverpool Sanatorium, Delamere Forest Frodsham—Sen. Asst to Med. Supt £350 Also Jun Asst. to Med Supt., £225

Lochgilphead Argyll and Bute District Mental Hosp—Res Asst M O £300

London County Council—Coroner for the County of London £1700 Asst M O's, Grade I £350 Also Grade II £250

Maidstone, Kent County Ophthalmic and Aural Hosp—Sen and Jun Ophth H S's at rate of £250 and £200 respectively

Manchester Ancoats Hosp—Asst Pathologist £300 to £350

Manchester, Duchess of York Hosp for Babies—Sen and Jun Res. M O 's at rate of £125 and £75 respectively

Manchester Ear Hosp—Res H S £120

Manchester Royal Children's Hosp Pendlebury—Asst M O for Out patient Dept at rate of £150

Manchester Royal Infirmary—Asst M O to Massage and Electrical Dept £100

Melbourne University—Chair of Anatomy £1200

Norwich Norfolk and Norwich Hosp.—Res Surg. O £250

Nottingham City—Asst Tuber O £500

Perth City—M O.H £800

Preston, Biddulph Grange Orthopaedic Hosp—Jun H.S at rate of £200

Preston and County of Lancaster Royal Infirmary—H.S to Eye Ear Nose and Throat Dept at rate of £150

Preston Wrightington Hosp, Appley Bridge—Jun Asst M O £200

Prince of Wales's General Hosp N—Res Jun H.P and two Res Jun. H.S's each at rate of £90

Princess Elizabeth of York Hosp for Children Shadwell E—H P at rate of £125

Princess Louise Kensington Hosp for Children N Kensington W—Clin Asst

Queen's Hosp for Children, Hackney road E—Res M O at rate of £250 Also H P and Cas O each at rate of £100

Reading Royal Berkshire Hosp—R M O to Blagrave Branch at rate of £150

Rochdale Infirmary and Dispensary—Second H.S at rate of £150

Rotherham Hosp—Sen H.S, £200 Also H.S for Ophth and Ear Nose, and Throat Depts £150

Royal Cancer Hosp, Fulham road S W—Two Asst Radiologists each £350 Also H S at rate of £100

Runwell Hosp for Nervous and Mental Disorders near Wickford Essex—H.S at rate of £150

Ryde, Royal Isle of Wight County Hosp—Hon Surgeon to Ear Nose and Throat Dept

Salop County Council (Medical Inspection of School children and Maternity and Child Welfare Schemes)—Asst. M O., £500

Salvation Army Mothers' Hosp Lower Clapton road, E—Sen Res M O £150

Sheffield Jessop Hosp for Women—Res M O at rate of £150

Sheffield Radium Centre—Locum Tenens M O

Sheffield Royal Infirmary—Cas. O at rate of £150

Shrewsbury, Royal Salop Infirmary—Res Surg O £250 Also Res H.S., at rate of £100

Southampton, Royal South Hants and Southampton Hosp—Cas. O and Res. Anaesthetist and H.S. to Ear Nose and Throat Dept., each at rate of £150

Stafford Staffordshire General Infirmary—H.S at rate of £200 Also H P and Cas O at rate of £150

Stoke-on Trent Longton Hosp—H.S at rate of £150

Stoke-on Trent North Staffs Royal Infirmary—Second H P at rate of £150

Swansea General and Eye Hosp—H.S at rate of £150

Tunbridge Wells Kent and Sussex Hosp—H.S to Ear Nose and Throat Dept £150

Wakefield City—Jun Asst M O, £500

Wakefield Clayton Hosp—Two H.S's each at rate of £200

Wakefield Scalebor Park Mental Hosp—Asst M O £650

Warwick King Edward VII Memorial Sanatorium, Hertford Hill—Jun. Asst. M.O at rate of £250

West Bromwich Hallam Hosp—H P and H.S each at rate of £200

West London Hosp, Hammersmith-road W—Res Anaesthetist, at rate of £100

Weston super Mare General Hosp.—Res. H P £150

Wigan Royal Albert Edward Infirmary and Dispensary—Res Med and Surg O and Reg £350 Also two H.S's, each at rate of £150

Windsor King Edward VII Hosp—Res. M O £300

Wolverhampton Royal Hosp—H P at rate of £125

Worcestershire Mental Hosp., Barnsley Hall Bromsgrove—Second Asst M.O £350

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Cross Hills (York W Riding)

INDEX TO THE LANCET VOL. I 1937

THE Index and Title page of Vol. I 1937 which was completed with the issue of June 26th is now ready A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET 7 Adam street, Adelphi W C.2 Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now

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REST ROOMS AT ST BARTHOLOMEW'S.—More accommodation for visitors to patients ill enough to require their attendance through the night has been provided in the new medical block opened recently by Queen Mary The original sleeping accommodation has been doubled and there are now 12 cubicles for women and 10 for men Each has a divan and an armchair and a canteen is open all night

WALLSEND INFIRMARY.—A tender for extensions which include a new maternity block has been provisionally accepted and the commissioner for special areas has made a grant of 75 per cent towards the scheme The cost has been estimated at about £12,750 and various donations have already been offered It is thought that an added annual income of about £2000 will be needed when the extensions are completed

SINGH COLLEGE

NOTES, COMMENTS, AND ABSTRACTS

"CHYRURGIC MEMOIRS"

BY ENID WILLIAMS, M D

John Moyle, senior, " one of Her Majesties Antient Navy Chirurgions," published in the year 1708 a book entitled " Chyrurgic Memoirs " It was dedicated to Prince George of Denmark and consists of an account of " many Extraordinary Cures which occurred in the Series of the Author's Practice especially at Sea '

Fifty-four cases are described with a vivid detail often lacking from modern case reports A short preface, whose naïveté and sincerity arrests attention, promises to " shew the Practical Part of Chyrurgery Pithily And wherein through unadvisedness I made any false Steps, I have here ingeniously shewed them as PHARI to caution you " Actually it is not until page 75 that he records a failure, not in a major feat of surgery, but an autopsy on a gentlewoman of 32 who had suffered from a " stupendious Hydrops " He ingeniously confessed that he knew not her distemper and was not willing to tamper with what he did not understand " But opened she was " From the description of his findings it appears likely that the condition was an immense ovarian cyst This is the only case he failed to cure, he shelved the responsibility and made the excuse that he was only an interested neighbour! All the others were alleged to have been cured by his skill The notes are written in a happy narrative style as " Two of the gunroom crew falling out, one happened to receive an unlucky blow on the head with a hand-spike " (p 22) " Two men differing in heaving of Ballest, the one gave the other a violent blow with his Shovel on the side of the Head " (p 34) " Being in Spain a Spaniard with his Stilletto stabbed one of our men in the back " (p 62)

Among the cases described are ten of head injuries, four of which were trepanned to evacuate submeningeal hæmorrhages or to raise depressed fractures There are ten notes of wounds and injuries with hæmorrhage, and eight are devoted to syphilis and other venereal conditions Operations were carried out with the assistance of the crew aboard and the patient received a ' Cordial to keep up his spirits " Hæmorrhage was controlled by tourniquet, the cauterising button, and by styptics such as powdered toad or dragon's blood When Moyle amputated a limb he used " dossels of Stupa sicca for the end of the bone " He stitched the skin with thread and after removing the stitches liked the wound to " digest kindly "—which it probably always did and then healed by granulation He was quite pleased when the stump was " red as a cherry " and the bone exfoliated Healing then took place after dressings of wine stupes and other mysterious ingredients had been applied Hæmorrhage was treated heroically, he tells of a man bleeding from the nose who " resisted all common means but the hæmorrhage still continuing and the man was like to bleed to death, at length I was sent for I immediately opened the cephalic vein in the Cutulus of the Arm " He then " blowed up into the Nostrils " the following powder " R Pulv ex Carm Bufon Bol Ver Ana ʒii Misce The patient was put to bed with a draught of 40 drops of laudanum in a glass of beer, and was advised to refrain from " Capital Liquors " and to drink small beer in future

The memoirs on syphilitic and venereal conditions include descriptions of gummata, periosteal nodes penetrating ulcers of the cranium, ' sordid ulcers," as well as buboes and primary sores, Mercury was his sheet anchor in treating them Moyle pushed the mercury orally and by inunction, until the patient salivated two quarts in 24 hours This salivation was maintained for three weeks and purging was carried out at the same time He was convinced of the value of this régime, believing that the body excreted the mercury and the " siphylic venom " at *the same time* Although his drugs now seem fantastic and his judgment strangely opposed to what we would call sound common sense, John Moyle supplies good reasons for his actions at every step Whether he was treating what he called squinzy, dislocated amygdals, apostems or any other " vexatious evils " with all the curious fairy-tale drugs of his age, his practice was mostly the result of personal experience, but he was not afraid of experiment once in a while

A copy of these vivid memoirs were found in the library of the Welsh National Medical School at Cardiff, and I am indebted to Dr Frank Hawking of the pharmacology department of the school for some of these notes on them

RECENT WORK ON PELLAGRA

THE varied problems presented by pellagra continues to engage widespread attention Last year H S Stannus showed[1] that quite apart from the countries with a high incidence of endemic pellagra such as Northern Italy, the U S A, Rumania, Transcaucasia, and Egypt, the disease occurs sporadically almost in all parts of Africa and in the tropical regions of Asia, Australia, and America, though endemics are confined to institutions and prisons Stannus also points out that in many cases of undoubted pellagra one or more of the classical triad of symptoms, dermatitis, diarrhœa, and dementia may be absent, and he makes out a good case for the inclusion under the label of pellagra of some conditions which have been described as different diseases Stannus has also discussed and criticised the different theories of causation of pellagra He maintains[2] that there is no difference between pellagra and conditions described as sporadic, pseudo, para-, alcoholic, and secondary pellagra The import of the observation by Spies and Payne that Castle's intrinsic factor is secreted by the stomach in pellagra is discussed, and also the association of the liberation of histamine in the skin with the exanthem in pellagra A new theory of the causation of pellagra is thus developed Stannus does not regard maize and a specific infective agent as factors in the ætiology of pellagra, nor does he believe the disease to be a simple avitaminosis He classes it among a number of conditions which are severally attributed to a failure in the production of " principles " by the interaction of " extrinsic factor " in the food with " intrinsic factor " normally produced in the gastric juice The extrinsic factor is held to include proteins of high biological value and some parts of the vitamin-B_2 complex, the intrinsic factor to be a constituent of the gastric juice which fails to be secreted after gastritis It is not so easy to follow Stannus's ideas about the action of the antipellagrous factor, which he believes to be stored in the liver He describes the action as that of " a catalyst governing the metabolism of the cells of the skin, mucous membranes and nervous system," and the changes in the tissue cells as " of the nature of a change in the colloid state of their contents towards lessened dispersion of flocculation "

Spies, Chinn, and McLester[3] have treated 50 cases of severe " endemic " pellagra in Birmingham, Alabama, U S A, in the following régime complete rest in bed, a mixed food of very high calorie value (about 900 calories daily from protein, 2000 from fat and 1700 from carbohydrates), and a daily dose of 180–270 g of powdered brewer's yeast, supplemented in some cases by an intravenous injection of 80–100 c.cm. of liver extract. They claim that this treatment reduced the death rate from 32 per cent. to 6 per cent. and that the fatal cases die not from pellagra but from other diseases, the pellagrous symptoms being improved. At autopsy all those endemic pellagrins exhibited severe injuries of the gastro-intestinal tract.

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[1] Stannus H S (1936) *Trop Dis Bull* 33 720 815 885 [2] — (1937) *Ibid*, 34, 183

[3] Spies T D Chinn A B and McLester J B (1937) *J Amer med Ass* 108 853

Sydenstricker and Armstrong[4] have reviewed 440 cases of pellagra observed by them in Augusta, Georgia, U.S.A., between Jan. 1st, 1910, and Dec. 31st, 1934. Of this series 8·8 per cent. gave histories of addiction to alcohol. The incidence of pellagra in the different years, the seasonal incidence, the distribution between races, sexes, and age-groups, the death rate, the occurrence of the clinical symptoms, the incidence of anæmia in pellagra, and the complications are discussed. The most striking results were: that the incidence of pellagra has a high peak in May, June, and July; pellagra was found to occur twice as often in females as in males; about 70 per cent. of the pellagrins were between 21 and 50 years of age; a daily addition of 30–60 g. of dried yeast to the food seems to have reduced the death rate from 38·7 per cent. to 25·3 per cent. Psychoses and high temperatures were much more common in those patients who died than in those who recovered. Anæmia was found in 83·6 per cent. of the patients, hypochromic anæmia in 77·6 per cent. Most of the patients showed an achlorhydria. Subacute combined sclerosis and peripheral neuritis were rare. Complications with other diseases were found in nearly half of the patients. In a very high proportion of autopsies on fatal cases lesions of the liver, most often fatty degeneration, were found.

Beckh, Ellinger, and Spies[5] report on the incidence of an increased porphyrin excretion chiefly in alcoholic pellagrins of Cleveland, Ohio, U.S.A. Ellinger had previously shown with Edgar and Lucas that rats deprived of the vitamin B_2 complex in the food excrete a highly concentrated porphyrin in the urine which disappears after adding vitamin B_2 to the diet, and with Dojmi that endemic pellagrins in southern Jugoslavia also excrete a highly concentrated porphyrin in the urine. Beckh, Ellinger, and Spies now show that the alcoholic pellagrins mostly have also an increased porphyrin excretion which disappears with the clinical symptoms of pellagra on suitable treatment. They discuss the ætiology of this porphyrinuria and its importance in the development of the pellagra, and point out the great similarity between the clinical symptoms of pellagra and of the genuine porphyria.

HEALTHY HOLLAND

COMPARISONS of the death rates from different causes of death between one country and another are notoriously dangerous. Standards of certification, medical fashions and customs, statistical rules of tabulation all play their part in producing differences in the recorded rates, which may or may not bear any relation to the real facts. Total death rates are a different matter, and in countries of western civilisation with a high standard of registration and reliable (and reasonably frequent) enumerations of their population, comparisons of interest can often be made. One such comparison was made by the Registrar-General for England and Wales in his annual text volume for 1934, where he set out the recently recorded death rates in broad age-groups in a dozen different countries. A particularly striking contrast is presented by the relative levels of mortality in England and Wales and Holland, a contrast which has been pointed out to us by a medical officer of health. The comparable rates given by the Registrar-General are for the three years 1930–32. In that period the infant mortality rates in England and Wales were 72 per 1000 live births for males, 65 per 1000 for females. In Holland the comparable figures were only 55 and 42, so that the Dutch rates were nearly one-quarter lower. It is possible that differences in the definition of a stillbirth play some part in the advantage apparently enjoyed by Holland, for according to the Statistical Handbook of the League of Nations Health Organisation[1] stillbirths in Holland include a proportion of children born alive but dying before registration—i.e., within 3 days of birth (an example of the dangers of too ready international comparison). But that this is most certainly not the whole explanation is shown by the comparison of the death rates at later ages.

In the first years of childhood, ages 1–4 years, the death rates recorded in Holland in 1930–32 were for males nearly a third, and for females fully a third, below those registered in this country. In the broad age-group 5–34 years the equivalent average rate (a standardised rate obtained by taking equal populations in each quinquennial age-group) was in Holland 72 per cent. of the rate in England and Wales for males and 77 per cent. for females. At ages 35–64 the corresponding ratios were 70 and 94, at ages 65–75 they were 79 and 101. It is clearly advantageous to pass the years of childhood in the Netherlands. For the male sex this advantage is not lost up to age 75, but the rates of women grow progressively nearer to those of our own country and even slightly exceed them at ages 65–75. It is a curious position. What causes produce such a relatively low mortality in the males of Holland at ages 35–75 and yet not tell to the advantage of the women? Or is it some factor which bears hardly on English males and not on their wives? At these ages the death rates of English males are about one-third above the rates of English females, while the rates of the Dutch males and females differ very little. Whether it is the English man or the Dutch woman, or both, who have grounds for complaint it is difficult to say.

If we extend the field of observation we find that the mortality rate in Holland has declined over the last quarter of a century considerably more than the rate in England and Wales. In 1911–13 the crude death rates of the two countries did not differ appreciably; they were 13·9 per 1000 in England and Wales and 13·1 in Holland. In 1935 the English rate had fallen to 11·7, the Dutch to 8·7. Changing age constitutions may play a part in this difference and necessitate standardised rates, for over the same period of time the birth rate in Holland fell less rapidly than the rate in England. But between 1911–13 and 1935 the infant mortality rate also fell by 62 per cent., that is, faster in Holland than in England and Wales, where the decline was by 40 per cent. The League's epidemiological reports also show the infant mortality rates in recent years in twenty Dutch towns to have been nearly half the figure registered in the 121 great towns of England and Wales, and the crude death rates to have been about one-third less. Risking some comparisons of causes of death we find that the death rates attributed to measles, scarlet fever, and diphtheria have for a considerable period been appreciably less in Holland than in this country. With whooping-cough there is little difference, and influenza takes a nearly equal toll. The tuberculosis death rate was in 1935 substantially lower in Holland, though up to 1927 there was little difference or even a higher rate in the Netherlands. The widening difference between the rates from this cause is of particular interest and seems worthy of inquiry. The League's Statistical Handbook shows that up to 1921 there was a very different trend in the death rates from pulmonary tuberculosis experienced by the two sexes. In England and Wales the death rates of males between 1901 and 1921 annually exceeded the rates of females, but the male rate fell rather more rapidly than the female rate. In Holland there was very little by the master and fellows of University College. Details about these prizes, &c., can be found in the current edition of the Oxford University calendar.

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[4] Sydenstricker, V. P., and Armstrong, E. S. (1937) *Arch. intern. Med.* 59, 883.

[5] Beckh, W., Ellinger, P., and Spies, T. D. (1937) *Quart. J. Med.* New Series, 23, 305.

[1] No. 1. The Official Vital Statistics of the Kingdom of the Netherlands, 19[illegible].

It is very difficult to give an estimate of the expense of that part of the course which is passed in Oxford, as the cost varies very much with the different colleges. Eighty pounds a term is, perhaps, the amount paid by the average student, but many manage on less than this. Once the B.A. degree has been taken, university and college dues are less.

The Radcliffe Infirmary

There are 456 beds, including 52 in the tuberculosis sanatorium and 30 in the recovery home. Courses of instruction are given to medical students of Oxford University by the regius professor of medicine, and by other members of the honorary staff of the infirmary. The subjects of instruction include clinical anatomy and physiology for those reading the first B.M., and elementary medicine and surgery and post-mortem examinations for those who have passed first B.M. and have qualified for the degree of B.A.

UNIVERSITY OF CAMBRIDGE

There are two degrees in Medicine, *M.B.* and *M.D.*, two in Surgery, *B.Chir.* and *M.Chir.*, and a Diploma in *Medical Radiology and Electrology*. The degrees of Bachelor of Medicine and Surgery cannot be taken separately. Students of Girton or Newnham College are admitted to the examinations for these degrees and the diploma.

The student must enter a College, or become a Non-Collegiate student, and keep nine terms (three years) by residence. He must pass the Previous Examination of the University before he comes into residence or therefrom obtain exemption, particulars of which may be obtained from the Registrary. He may then devote himself to medical study in the University. Under present regulations it is necessary for a candidate to obtain honours in a Tripos Examination. The Natural Sciences Tripos is taken most frequently by medical students, for if the required standard is reached in *Anatomy and Physiology* in this Tripos no further examination is required in those subjects; if he obtains honours but does not reach the required standard in those subjects he may take qualifying examinations subsequently in Anatomy and Physiology. The student must also in the Tripos take one more subject or two half-subjects. Pathology and Biochemistry, which are of great practical importance to medical students, can both be taken as half-subjects. If a student fails to reach an honours standard, he is required to reach that standard in a subsequent year before he can proceed to the Final M.B. Examination.

For the degrees of Bachelor of Medicine and Surgery (M.B., B.Chir.), five calendar years of medical study are required either in Cambridge or at one of the recognised Schools of Medicine. The first three years are spent in Cambridge till the student has passed the examination for the Natural Sciences Tripos. There is also an oral examination in Pharmacology which must be passed before the student seeks admission to the final examination. Hospital practice may be attended at Addenbrooke's Hospital, Cambridge. The laboratories for Botany, Chemistry, Physics, Biology, Zoology, Human Anatomy, Physiology, Biochemistry, Pathology, Bacteriology, Pharmacology and Psychology are well equipped. Addenbrooke's Hospital, the Infectious Diseases Hospital, the Cambridge Research Hospital, and the Field Laboratories are utilised for study and research.

The *First M.B. Examination* includes (1) General and Inorganic Chemistry, (2) Physics, (3) Elementary Biology, and (4) Organic Chemistry. These parts may be taken together or separately. After the First Examination, and tests in Pharmacology, Physiology, and Anatomy, comes the *Final Examination*, divided into two parts: (1) Principles and Practice of Surgery (including Special Pathology and Midwifery and Diseases Peculiar to Women), and (2) Principles and Practice of Physic (including Diseases of Children, Mental Diseases, Medical Jurisprudence), Pathology (including Hygiene and Preventive Medicine), and Pharmacology (including Therapeutics and Toxicology). The examinations are partly in writing, partly oral, and partly practical, in the hospital, in the dissecting room, and in the laboratories. The student can proceed to the degrees of M.B., B.Chir. after passing the final examination.

The degree of Doctor of Medicine (M.D.) may be taken by a graduate of the University of eight years' standing who has passed the Final M.B. Examination. An Act has to be kept, consisting of an original Thesis with viva-voce examination, and an examination, oral or written or both, *on the field of Medicine* within which the Thesis falls may be allowed or required.

Candidates for the Degree of Master of Surgery (M.Chir.) who are M.A.'s may be admitted to the examination after they have become legally qualified under the *Medical Acts* to practise surgery. Others may be admitted to the examination when two years at least have elapsed after they have completed all that is required of candidates for the degrees of M.B., B.Chir. *Candidates are required to pass an examination* in Principles and Practice of Surgery, Surgical Anatomy and Surgical Operations, and Pathology. (The examination is held in February.)

Scholarships and Prizes.—Medical studies are endowed by the numerous Natural Science scholarships at the various colleges, information about which can be obtained from the respective Tutors. There are Natural Science scholarships at most of the Colleges and prizes in the ancillary medical subjects. Some of these are entrance scholarships; some may be gained by students already in residence, and where suitable candidates are not forthcoming among such students the emoluments may be allotted to members of other Colleges. Valuable scholarships instituted on behalf of Medicine are the Tancred Studentships in Physic, tenable at Gonville and Caius College. The successful candidates must enter at the college within a month or remove there if they are members of any other college. Students are required to take the degree of M.B. as soon as they are of sufficient standing but may hold a Studentship for a further three years. Thus a student elected previous to admission to college can draw the emolument, the annual value of which is about £100, for eight years. Full particulars can be obtained from Mr. E. T. Gurdon, 28, Lincoln's Inn fields, London. Among other scholarships and prizes may be mentioned the Balfour Studentship, for research in Biology, of the value of £300 a year for three years, not restricted to members of the University; the Frank Smart Studentship and Prizes for Botany and Zoology; the Shuttleworth Studentship for Zoology or Physiology tenable at Gonville and Caius College; and the Marmaduke Shield Scholarship in Human Anatomy. The one University prize in Medicine, the Raymond Horton Smith Prize, is awarded to that candidate for the degree of M.D. who presents the best thesis for the degree during the academical year, provided that he has taken honours in a Tripos Examination. The E. G. Fearnsides Research Scholarship and several very valuable studentships are also awarded.

Copies of the Regulations and Schedules of the range of the examinations in Chemistry, Physics, Biology, Pharmacology, and General Pathology may be obtained upon application to the Registrary, The Registry, Cambridge.

Department of Medicine and Addenbrooke's Hospital

A department of medicine has now been established in the university, with an assistant director of research and a group of whole-time qualified research students working under the direction of the regius professor of physic The visiting staff of Addenbrooke s Hospital (315 beds) coöperate closely and afford full facilities for clinical study and research The work of the research unit is carried out in the medical wards of the hospital and in laboratories which have been allotted in the department of pathology Lectures and practical instruction in medicine are given by the regius professor and members of the medical staff to certain groups of senior students during the Lent term and the first half of the Easter term. A few illustrative clinical lectures and demonstrations are also given to students taking the physiology course Regular staff rounds *are held in the hospital but there is no routine system* of undergraduate clinical teaching It is open however to individual students to attend the ward rounds and out patient sessions of the physicians and surgeons by special arrangement Fortnightly clinical conferences in the evening are organised by the department of medicine these are open to graduates research students, and senior students in all the departments of the faculty

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UNIVERSITY OF LONDON

The University of London was constituted in 1836 reconstituted under Act of Parliament, 1898 as a teaching as well as an examining body, and again reconstituted under Act of Parliament, 1926 All the metropolitan medical schools are constituent colleges while Clinical Units have been established at St. Bartholomew s the London, St Mary s St. Thomas s, University College Hospital, and the Royal Free

A revision of the medical curriculum is under consideration in view of a report submitted to the Senate by a Conference of representatives nominated by the Universities of Oxford Cambridge and London, the English Royal Colleges, and the Society of Apothecaries

Internal and External Students—All the examinations of this University are open to men and women alike Matriculated students of the University may be either internal or external. Internal students of the University are students who are registered as pursuing a prescribed course of study or an approved course of research in a school of the University or under teachers of the University Centres for preliminary and intermediate medical studies have been established by the University at University and King s Colleges. External students in addition to matriculating must register as preparing for an examination leading to a Degree or Diploma within the purview of the Council for external students.

UNIVERSITY COLLEGE

University College is a University centre for the teaching of medical sciences. The College Faculty of Medical Sciences comprises the departments of physics chemistry botany and zoology (the Preliminary Medical Sciences) also the departments of anatomy and embryology physiology biochemistry and pharmacology (the Intermediate Medical Sciences) Post-graduate and research work is undertaken in all departments. The completion of the building scheme by the erection of the section for anatomy histology and embryology together with further extensions to the department of physiology biochemistry biophysics, and pharmacology and the provision of new accommodation for the department of zoology which the generosity of the Rockefeller Foundation made possible provides exceptional facilities for research and post-graduate study The opportunities for investigation in human and comparative embryology and neurology in histology radiology anthropology biochemistry and experimental physiology and embryology may be mentioned In the department of zoology and comparative anatomy the study of genetics accompanies that of comparative physiology and animal behaviour Arrangements exist for the close correlation of the work of the Faculty with University College Hospital and Medical School Women students are admitted

Scholarships and Prizes—The first four items on the present list provide a completeintermediate course at University College, and in the case of (*a*) the later clinical stages at University College Hospital The money value and subjects at examinations are as follows: (*a*) Bucknill Scholarship 160 guineas (*b*) and (*c*) two Entrance Exhibitions, 55 guineas each Chemistry Physics, Botany Zoology and an English essay; (*d*) Entrance Scholarship £30 a year for three years (*e*) Ferriere Scholarship £25 for three years, tenable at University College Hospital medical school, awarded to a student who has done his Anatomy and Physiology at University College and has completed the 2nd Medical Examination; (*f*) Cluff Memorial Prize £15 biennially Anatomy Physiology Pharmacology and Chemistry (*g*) Schafer Prize in Physiology £18 triennially (*h*) Sharpey Physiological Scholarship, about £112 (*i*) Bayliss-Starling Scholarship, £120 a year Physiology Biochemistry (*j*) Percy F Macgregor Research Scholarship in Embryology £50; (*k*) Morris Bursary for sons of deceased professional men, tenable for two years £20 a year and (*l*) two Gold Medals awarded annually in Anatomy and Physiology For information apply to the Secretary University College Gower-street London W C 1

KING S COLLEGE

The Medical Faculty at this College of the University gives instruction in the subjects of Medical Science for all the usual Preliminary and Intermediate Examinations in Medicine and Surgery Through the four associated hospitals students of the College have clinical facility of over 1000 beds

The Medical Faculty of the College provides a general University education in touch with other Faculties classes of which medical students are permitted to attend. There are many College societies clubs, and functions, in which students of all faculties have opportunity of meeting each other The College has a large athletic ground at Mitcham, with a new and well-equipped pavilion.

The First Year subjects are taught in the large Departments of the Faculty of Science and those for the Second and Third Years in the new Medical Department consisting of the Hambleden Department of Anatomy and an extension to the department of physiology, built at a cost of £70 000 These new buildings and others of recent years provide the College with a completely new and modern Medical Department which embodies the newest ideas in laboratory construction and equipment Special facilities are given for taking science degrees in association with medical degrees as is done in the older universities of Oxford and Cambridge

Scholarships and Prizes—Two Warneford Entrance Scholarships of £30 each for four years Examination in May subjects selected from Divinity Classics Science. One Sambrooke Scholarship of £30 for three years. Examination in May subjects selected from Classics Science Worsley Scholarships: £100 in five annual instalments of £20 *At the end of the First Year* of study, one Warneford Scholarship of £30 for four years, subjects as for First M.B the Rabbeth Scholarships (£30 and £15) the Carter Gold Medal and Prize in Botany and the Hare Prize in Zoology are open for competition. *At the end of the Third Year* the Hughes Prize in Anatomy the Huxley Prize in Physiology the Inchley Prize in Pharmacology and the Jelf Medal are open for competition. The Layton and the Berridge Research Studentships (£150 and £100 per annum respectively) the Daniell Scholarship in Chemistry (£40) Warneford Prizes (£25 and £15) Leathes Prize Barry Prize &c are also open to Students of this Faculty The majority of the Scholarships and Prizes are open to Regular Students only For information apply to the Dean of the Medical Faculty

The Medical Faculty of the University

Medical students of the University of London who are pursuing their medical curriculum in the metropolis will proceed to one of the recognised medical schools connected with the University. The schools are described in detail in the next section; they are St. Bartholomew's Hospital, Charing Cross Hospital, St. George's Hospital, Guy's Hospital, King's College Hospital, the London Hospital, St. Mary's Hospital, the Middlesex Hospital, St. Thomas's Hospital, University College Hospital, Westminster Hospital, and the London (Royal Free Hospital) School of Medicine for Women. Students of St. George's, Charing Cross, and Westminster Hospitals take their preliminary medical studies at King's College. Students of the London Hospital usually attend Queen Mary College for the subjects of their first medical examination. Various schools and hospitals are also recognised as schools of the University in special departments, and students may pursue their studies at other approved universities and medical schools.

The Faculty of Medicine of the University grants the joint degrees of M.B., B.S. (*Bachelor of Medicine and Surgery*), the higher separate degrees of M.D. (*Doctor of Medicine*) and M.S. (*Master of Surgery*), and the degree of B.D.S. (*Bachelor of Dental Surgery*) and the degree of B.Pharm. (*Bachelor of Pharmacy*), the two higher degrees being open only to candidates holding the M.B., B.S. degrees of the University. The curriculum for the M.B., B.S. degrees is five and a half years from the time of matriculation, with certain exceptions which must be looked for in the official regulations of the University.

A. *Internal Students*.—For the Bachelor's degrees in Medicine and Surgery a student must normally, after registration as an internal student, have: (1) Attended prescribed courses of study for five and a half years in one or more schools of the University. (2) Passed the following examinations, under the conditions mentioned below: (*a*) the First Examination for Medical Degrees in Inorganic Chemistry, Physics, including Mechanics, and General Biology; (*b*) the Second Examination for Medical Degrees: Part I., Organic Chemistry; Part II.: Anatomy, Physiology, and Pharmacology; (*c*) the Third Examination for Medical Degrees, or M.B., B.S. Examination in Medicine, Surgery, Obstetrics and Gynæcology, Pathology, Forensic Medicine and Hygiene.

B. *External Students*.—For the Bachelor's degrees in Medicine and Surgery an external student must (1) have passed the Matriculation examination or have been exempted therefrom not less than five and a half years previously; (2) have passed subsequent examinations similar to those required of an internal student; and (3) have been engaged in professional studies during the five and a half years subsequently to Matriculation and four and a half years subsequently to passing the First Examination for Medical Degrees at one or more of the medical institutions or schools recognised by this University for the purpose, one year at least of the four and a half years to have been spent in one or more recognised institutions or schools in the United Kingdom.

The First Examination for Medical Degrees (Inorganic Chemistry, Physics, including Mechanics, and General Biology) will take place twice in each year commencing on the Monday following Dec. 5th and on the first Monday in July. It must be passed not less than nine months after matriculation.

The Second Examination for Medical Degrees (Part I.): Organic Chemistry.—This examination will take place twice in each year, commencing on the Thursday following the second Monday in March and on the Thursday following the first Monday in July. No candidate will be admitted to this examination until he has completed the First Examination.

The Second Examination for Medical Degrees (Part II.) takes place twice in every year, commencing on the third Monday in March and on the first Monday in July. No candidate will be admitted to the examination unless he has passed the First Examination for Medical Degrees at least 18 months previously, and has passed Part I. of the Second Examination for Medical Degrees.

The Third or M.B., B.S. Examination.—The M.B., B.S. examination takes place twice in each year, commencing on the second Monday in November and on the first Monday in May. No candidate will be admitted to this examination unless he has completed the Second Examination for Medical Degrees, together with a course of study summarised below, nor within three years from the date of passing the Second Examination, Part II., in Anatomy and Physiology. The course of study comprises introductory courses in (1) Clinical Medicine, (2) Clinical Surgery, (3) Clinical Pathology; and the following: Experience as Clinical Clerk; course in Clinical Medicine: (*a*) Fevers, (*b*) Children's Diseases, (*c*) Venereal Diseases, (*d*) Mental Diseases (at a recognised Asylum), (*e*) Dermatology, (*f*) Vaccination, (*g*) Materia Medica and Pharmacy; Experience as a Surgical Dresser; course in Clinical Surgery; Ophthalmology; Oto-Rhino-Laryngology; (*a*) Operative Surgery, (*b*) Applied Anatomy, (*c*) Administration of Anæsthetics, (*d*) Dental Surgery, (*e*) Orthopædic Surgery, (*f*) Mechano-therapeutics; Obstetrics and Gynæcology; Lying-in Hospital; the conduct of at least 20 Labours; Ante-natal Clinic; Experience as a Clinical Clerk in Gynæcological Work; General Pathology, Morbid Anatomy, Bacteriology, and Chemical Pathology; Work in the *Post-mortem Room*; *Clinical Laboratory*; Forensic Medicine; Hygiene. He must have attended the Medical and Surgical Practice of a recognised hospital for two years, and have held the posts of clinical clerk and surgical dresser for periods of six months each. Candidates will be examined in Medicine, Pathology, Forensic Medicine and Hygiene, Surgery, Obstetrics, and Gynæcology. The subjects may be divided into two groups—namely: (1) Medicine, Pathology, Forensic Medicine, and Hygiene and (2) Surgery, Obstetrics, and Gynæcology, and may be taken either separately or together.

Doctor of Medicine.—The examination for this degree takes place twice in each year, commencing on the second Monday in December and on the first Monday in July. Candidates may present themselves for examination in one of the following branches—namely: (1) Medicine; (2) Pathology; (3) Psychological Medicine; (4) Midwifery and Diseases of Women; (5) Hygiene; and (6) Tropical Medicine. Any candidate may transmit to the Registrar a thesis for approval and may be exempted from a part or from the whole of the written examination, and in the case of Branch II. (Pathology) also from the practical examination.

Master of Surgery.—The examination for the degree of Mastery of Surgery takes place twice in each year: (1) Surgery; (2) Dental Surgery; (3) Ophthalmology; (4) Laryngology, Otology, and Rhinology. A thesis may be submitted as for M.D.

Doctor of Philosophy.—A Degree of Ph.D. has been instituted in non-clinical subjects for Internal and External Students in the Faculty of Medicine. Candidates for this degree must hold, in a branch of study akin to that in which they propose to proceed to the Ph.D. Degree, the Degree of M.B., B.S., or B.D.S., or B. Pharm., or B.Sc.

Bachelor of Pharmacy.—This is a three years' course.

Full details of the prescribed curricula can be obtained free on application to the Academic Registrar, or for External Degrees from the External Registrar, University of London, Bloomsbury, W.C. 1.

PHARMACEUTICAL SOCIETY

THE COLLEGE OF THE PHARMACEUTICAL SOCIETY is a constituent part of the University of London. The Society conducts examinations for registration as (*a*) Chemist and Druggist and (*b*) Pharmaceutical Chemist Courses of Instruction are given for these examinations

A two years course for the Final Examination for the degree of B.Pharm. of the University of London is also given Medical students are admitted to the lectures and laboratory work. Certificates of instruction in the School are received by the Conjoint Board of the Royal Colleges and by the University of London Graduates of approved Universities may carry out the research work necessary for the thesis for the Ph.D of the University of London in the Society s Research Laboratories; this degree may be taken in Pharmacy Pharmacognosy, Pharmaceutical Chemistry and Pharmacology Several scholarships are also offered Further information may be obtained from the Dean 17, Bloomsbury square London

MEDICAL SCHOOLS OF THE UNIVERSITY OF LONDON

St Bartholomew's Hospital and College

The hospital contains 845 beds, of which 775 are for patients in the hospital at Smithfield and 70 at the Alexandra Hospital Swanley Special departments have been organised for diseases of women and children the eye, ear larynx, and skin as well as for orthopædic and dental surgery, and for electrotherapeutics and X ray work. Whole-time Clinical Units under professors of medicine and surgery have been established A new surgical block of ten wards with accommodation for 250 patients, and connected with a block of five new operation theatres is now in use A new medical block was opened in July, 1937 containing 250 beds

Ten house physicians *and ten house surgeons* are appointed annually are provided with rooms and board and receive £80 a year as salary A resident midwifery assistant, an ophthalmic house surgeon, and a house surgeon for diseases of the throat nose and ear and a house surgeon for orthopædic surgery are appointed every six months and are provided with rooms and board and receive a salary of £80 a year Three resident administrators of anæsthetics are appointed, the senior for one year at a salary of £150, and two juniors for six months with a salary at the rate of £80 per annum with board and rooms An extern midwifery assistant is appointed every three months, and receives a salary of £80 a year The clinical clerks, the obstetric clerks the clerks to the medical out-patients, the dressers to the surgical in patients and to the out-patients and the dressers in the special departments are chosen from the students.

There are quarters for the resident staff casualty medical surgical, and special out patient departments, casualty wards dispensary and clinical lecture theatre A block is devoted to pathology and contains the post mortem room as well as extensive laboratories for bacteriology clinical pathology and pathological chemistry *The Medical College Buildings* include three large lecture theatres laboratories for clinical pathology chemical pathology, bacteriology, morbid anatomy and histology and public health, as well as a spacious library (containing 14 500 volumes) The pathological museum is complete

The College has recently bought the site and buildings in Charterhouse-square (five minutes walk from the Hospital) formerly occupied by the Merchant Taylors School and the whole of the preclinical departments have now been transferred there Spacious new laboratories are now in use for the teaching of chemistry physics biology anatomy physiology &c

Special *classes* for the Primary and Final F.R.C.S Examinations are held twice yearly *Instruction in Preliminary Science* is given to University of London students in chemistry biology and physics throughout the year Facilities for research work are afforded in the Clinical Units and laboratories of pathological and other departments *Vacation Anatomy Courses* are given in winter spring and summer

Scholarships given in aid of Medical Study—Six Entrance Scholarships and Exhibitions are awarded annually—viz.: (1) and (2) a Scholarship entitling the holder to free undergraduate medical education for a period of three years; and an Exhibition of £60 in any two of the following subjects Human Anatomy and Embryology Physiology Pathology (including Bacteriology) Biochemistry (3) a Scholarship of £100 in Chemistry Physics, and Biology; (4) and (5) a Scholarship of £100 and the Jeaffreson Exhibition of £50 in Mathematics Latin or Greek or French or German, a second language or Chemistry or Physics; (6) Helen Cave Memorial Scholarship awarded after open competition to sons of Registered Medical Practitioners, value about £200, conditions obtainable from the Dean; (7) Shuter Scholarship of £50 in Anatomy and Physiology, which is awarded after competitive examination among Cambridge Graduates The more important of the other Scholarships and prizes are as follows: Four Junior Scholarships—(8) No 1 £30 Anatomy and Physiology; (9) No 2 £20 Anatomy and Physiology; (10) No 3 £25, Chemistry, Physics, and Biology; (11) No 4, £15 Chemistry Physics and Biology (12) *Senior* Scholarship, £50 Anatomy Physiology and Chemistry; (13) Kirkes Scholarship £30 and medal, Clinical Medicine; (14) and (15) two Brackenbury Scholarships, £30 each, one in Medicine and one in Surgery; (16) Sir G Burrows Prize, 10 guineas, Pathology; (17) Skynner Prize 13 guineas, Regional and Morbid Anatomy (18) Matthews Duncan Medal and Prize £20 Midwifery and Gynæcology (19) Luther Holden Research Scholarship in Surgery awarded by election, £105, (20) Lawrence Research Scholarship and Gold Medal in Pathology awarded by election £115; and (21) Baly Scholarship in Clinical Medicine, £75 awarded by examination.

The recreation ground of 17 acres for the use of the members of the Students Union, is on the Foxbury Estate at Chislehurst The Union s premises at the Hospital contain a large reading and smoking room, a committee and writing room, luncheon and dining hall and a miniature rifle range Athletic amenities are also available on the new site in Charterhouse-square

Charing Cross Hospital

Charing Cross Hospital Medical School is a school of the University of London in the Faculty of Medicine It is situated in the very centre of the Metropolis and access by train tube bus, and tram is unrivalled students residing in town, in the suburbs or in the open country are equally well provided for The school provides courses of instruction for the whole of the medical curriculum. Students are admitted after matriculation and by arrangement with King s College pursue at that institution the courses of study in the subjects of the first and second examinations for medical degrees.

The hospital contains 300 beds, and in order to ensure that each student shall have a full complement of clinical material in his personal care during the important periods of clerkship and dressership overcrowding is avoided by limiting the entry of students to 30 each year As a result the firms are small and each student is responsible for not less than six beds Similarly in the theoretical courses the classes consist of not more than thirty students between whom and the staff close and intimate contact is preserved throughout the period of training Every student holds appointments as clerk or dresser in every department of the hospital

In 1936 5150 patients were admitted to the wards of the hospital, 32 614 new cases were seen in the out patients department and attendances numbered 165 732 In addition to the departments of medicine and surgery there are special departments for midwifery, diseases of women, children, dermatology, ear, nose, and throat, ophthalmology, orthopædics, psychological medicine, radiology, and electrotherapeutics, anæsthetics, teeth, casualties, fracture cases, tuberculosis, and arrangements are made to cover instruction in fevers, venereal diseases and vaccination

Six house physicians, six house surgeons, two obstetric and gynæcological house surgeons, eight house officers to the special departments, and two resident anæsthetists are appointed annually The following senior appointments are open to students after they have held resident appointments resident medical officer, at a salary of £400 per annum , resident casualty officer, at £200 per annum , and six registrars to the medical, surgical, obstetric, and ear, nose, and throat departments

In the pathological institute, under a whole-time staff of scientific workers and in fully equipped laboratories, students receive their training in preventive medicine, pathology, and bacteriology There are special facilities for research For the course in practical ophthalmology the facilities of the Royal Westminster Ophthalmic Hospital are available as additional instruction Courses in general Medicine, surgery, and pathology, with the requisite clinical work in the wards and out-patient departments, are provided for students reading for dental qualifications

The pathological museum, containing over 4000 specimens and 3000 histological preparations, comprises (1) the section in general pathology, and (2) the Cuthbert Lockyer Collection of over 1150 gynæcological and obstetric specimens Its usefulness is enhanced by a complete catalogue, illustrated by actual photographs The library, which is large and comfortable, contains over 4000 volumes The text-book section, numbering some hundreds of books, is added to each time a new edition of a standard work is issued

Scholarships and prizes —The following scholarships, exhibitions, and prizes are offered annually (1) The Thomas Henry Huxley scholarship in anatomy (2) The Benjamin Golding, and (3) the David Livingstone scholarships in pathology or biochemistry, value of each £120 (4) The Edith and Mary Donald scholarship, value £75, in anatomy and physiology (5) The George Verity and (6) the entrance scholarships, by nomination , £50 each. The examinations for (1) to (4) are held in June or July In addition two exhibitions of £60 each may be awarded on the results of the same examination Periodically, elections are made to the Epsom College and the Cranleigh College scholarships The following awards are made on the results of the Easter term class examinations (1) The Llewellyn scholarship, £25, the Llewellyn certificate of merit (with £10) for highest distinction throughout the course of final studies , (2) William Travers prize, £15 , (3) J H Morgan prize, £10 , (4) Dr H W C Vines prize in pathology, £5 , (5) Dr Russell Reynolds prize in radiology, £5 , (6) and (7) T H. Green prize and Pereira prize for clinical commentaries, £5 5s each , Steadman prize in pathology and class prizes in medicine, surgery, and all the different subjects of the medical curriculum.

The Students' Club, with smoking and luncheon rooms on the school premises, cloak room, telephone, &c provides for the social comfort and convenience of the students The club is controlled by a committee of students, and includes the Medical Society and the Dramatic Society The *Gazette* is published quarterly The sports ground of eight acres at Colindale affords facilities for Rugby and Association football, cricket, hockey, and tennis In addition there are sections of the club devoted to athletics, boxing, swimming, golf, badminton and squash rackets The order has been given for the erection of a new permanent brick built pavilion, with changing rooms, baths, tea-room, bar, and so forth

St George's Hospital

Plans are being prepared for the complete rebuilding of the whole of the Hospital and Medical School on its present site, and it is hoped that the new hospital will contain at least 500 beds and a much larger Medical School In the meantime the work of the Institution will be continued unaltered.

This hospital has now a service of 436 beds, of which 180 are allotted to surgical, 150 to medical cases, and 100 are at the Convalescent Hospital at Wimbledon There are all the usual special clinical departments, including fracture clinics, a psychiatric department, and a department for nervous diseases During the past year lecture-demonstrations in psychiatry for post-graduate students have been inaugurated and are given on alternate Thursdays at 5 o'clock during term time As is the case with the neurological demonstrations which have been given for many years past at 5 o'clock on Thursdays, they are open without fee to all members of the medical profession and medical students One ward is set apart for diseases peculiar to women, and there is a maternity ward of 13 beds One ward is set apart for the medical diseases of children. There are two ophthalmic wards

Eight house physicians, ten house surgeons, and eight casualty officers are appointed annually They are provided with board and lodging in the hospital and receive honorariums of £40 per annum In addition the following appointments are open to all qualified students of the hospital resident assistant physician at £250 per annum , medical officer to the Atkinson-Morley Convalescent Hospital at £300 per annum , two medical registrarships at £100 per annum , two surgical chief assistants (resident) at £200 per annum , assistant curatorship of the museum at £100 , obstetric assistantship (resident) at £100 , the post of resident anæsthetist at £100

The teaching and laboratories are devoted to clinical subjects, and arrangements have been made with the authorities of King's College for students who enter the first, second, or third year of the curriculum as students of St George's to carry out the necessary courses of instruction at this College Students then complete their course, without payment of any entrance fee, in a school entirely devoted to clinical work

Scholarships and Prizes —At this school 11 entrance scholarships and exhibitions are given, the money value and the subjects of examination being as follows (*a*) and (*b*) two William Brown Exhibitions, £120 and £80 respectively , (*c*) and (*d*) two Anne Selina Fernee Scholarships £80 each , (*e*) Devitt-Pendlebury Scholarship, £50 (approx) , (*f*) and (*g*) two Anne Selina Fernee Exhibitions, £60 each, Anatomy and Physiology except in the case of (c) and (*f*) subject of examination for which is General Pathology

In addition to the above, Exhibitions each of the value of £40 and up to four in number may be awarded to candidates of approved merit in the Entrance Scholarships Examination The others are as follows (*h*) Allingham Scholarship in Surgery for Students qualified not more than two years, £87 , (*i*) and (*j*) two Brackenbury Prizes, one in Medicine and one in Surgery, £33 each, open to students of not more than five years' standing , (*k*) H C Johnson Memorial Prize, £20, Practical Anatomy , (*l*) Pollock Prize, £24 Physiology, Physiological Chemistry, and Histology , (*m*) Clarke Prize, £5 , (*n*) Thompson Medal, £9, Clinical Reports , (*o*) Brodie Prize, £8, Clinical Reports , (*p*) Webb Prize, open to perpetual pupils £34, Bacteriology , (*q*) Laking-Dakin Research Fellowship, £115 (approx), open to students having registrable qualifications

The Library is fully stocked with the latest and best text-books The Pathological Museum has recently undergone complete revision In addition to its well known specimens of great historical interest, it contains a complete range of pathological conditions, set out in such a way that the student can easily obtain the fullest information relating to any disease

The St. George's Hospital Club with smoking and luncheon rooms on the hospital premises and an athletic ground at Wimbledon, is an amalgamation of the Hunterian Society the *Gazette* and the Rugby football cricket lawn tennis, boxing rifle, and golf clubs Students have the advantage of a library of medical and scientific books which is kept up to date

Guy's Hospital

The Medical School provides ample accommodation with modern equipment for all the subjects of the medical curriculum and the extension now being constructed will centralise the whole school in one block of buildings. The Hospital contains 647 beds On commencing the clinical period, students are placed for three months under the charge of an experienced clinical tutor while they are given a preliminary course of instruction in methods of clinical examination. Thereafter they hold a series of appointments, each of three months duration, in the surgical medical, and obstetrical and gynæcological wards.

The following special departments are attached to the hospital: Departments of ophthalmology laryngology gynæcology diseases of children diseases of the nervous system, psychological medicine, dermatology otology actino-therapeutics anæsthetics dentistry, orthopædics, vaccine, tuberculosis, genito urinary venereal diseases and the Salomon's Welfare Centre (for maternity and children) There is a venereal clinic in accordance with the scheme of the Ministry of Health and the L.C.C

House physicians, house surgeons out-patient officers, assistant house surgeons, obstetric residents, house surgeons in the departments of ophthalmology laryngology and genito urinary diseases, house physicians in the departments for neurology dermatology and diseases of children and clinical assistants, are appointed from among recently qualified students according to merit.

Scholarships—Five Entrance Scholarships are awarded annually and one every other year as follows: (*a*) one War Memorial Scholarship of the value of £200 awarded alternately in Arts and Science (next award, April 1938, in Science); (*b*) one Open Arts Scholarship of £100 for students under 19 years of age awarded annually in April; candidates are required to take English and any two of the following subjects: Latin Greek, French German and Mathematics; (*c*) one Open Junior Science Scholarship of £100 for students under 20 years, awarded in April; subjects, any three of the following: Inorganic Chemistry Physics, Biology and Mathematics; (*d*) a confined Junior Science Scholarship of the value of £100 is awarded annually and is open to students who have attended the Preliminary Science Classes at this School This Scholarship is awarded on the results of the First M.B London Examination held in July subjects: Chemistry Physics, and Biology; (*e*) University Entrance Scholarships (1) a War Memorial Scholarship entitling the holder to free medical education for three years, awarded annually in June or July; (2) an open exhibition of the value of £60 awarded annually in June or July for students who have completed their examinations in Anatomy and Physiology in a British School or University outside the London Metropolitan area; subjects, any two of the following: Human Anatomy and Embryology Physiology, Pathology including Bacteriology Organic Chemistry The examination is held in common with the Medical School at St Thomas's Hospital and the Medical College of St. Bartholomew's Hospital.

Prizes—The following prizes are awarded annually: (*a*) Treasurer's Medal and Prize for Clinical Medicine; (*b*) Treasurer's Medal and Prize for Clinical Surgery; (*c*) Golding Bird Gold Medal and Scholarship (£25) for Obstetrics and Gynæcology; (*d*) Golding Bird Gold Medal and Scholarship (£25) for Bacteriology; (*e*) Charles Oldham Prize in Ophthalmology (£30) (*f*) Charles Oldham Prize on the Neurological Aspects of Ophthalmology (£30); (*g*) Beaney Prize for Pathology (£34) (*h*) Leonard Lubbock Prize for Clinical Pathology (£10) (*i*) Wooldridge Memorial Prize for Physiology (£10); (*j*) Sands Cox Scholarship in Physiology (£45)—awarded triennially (*k*) Prizes in Anatomy and Physiology for General Proficiency of the value of £20 £15 and £10 respectively (*l*) Michael Harris Prize for Dissections (£5)

Studentships—The following Studentships are open to graduates from this School: (1) Gull Studentship in Pathology (approx. £250 per annum); (2) Arthur Durham Travelling Studentship (£100)—awarded triennially (3) Beaney Studentship in Materia Medica (£60 per annum); (4) Anderson Demonstratorship in Clinical Chemistry (£175 per annum); (5) Griffiths Demonstratorship and Research Studentship in Pathology (£320 per annum); (6) Adrian Stokes Fellowship in Pathology and Bacteriology—awarded biennially (7) Hilda and Ronald Poulton Fellowship (£150 per annum)

The Wills Library contains 10,000 volumes of standard text-books and books of reference the Museum contains upwards of 5000 specimens of pathological anatomy supplemented by more than 2000 drawings

Within the grounds of the hospital are situated the residential college, with accommodation for 35 students, the students club with reading smoking luncheon and dining rooms a squash court, a fives court, and swimming bath. The athletic ground and club house is situated at Honor Oak Park, and can be reached in 15 minutes from the hospital

King's College Hospital

Instruction for the preliminary and intermediate examinations is given at King's College.

The new medical school at Denmark hill, opened in July, 1933 contains the Museum, Research Laboratory Research Rooms, Common Rooms, Lecture Rooms, Refectory and two Squash Rackets Courts. Provision is made for all the subjects of the medical curriculum. In the education at the hospital a special feature has always been the individual attention given to each student The studies are coördinated under the direction of senior members of the honorary staff assisted by medical, surgical, obstetric and pathological tutors Twelve women medical students are admitted annually

The numerous appointments open to students are those of clinical assistant to the general and special departments; medical surgical obstetric, and pathological tutorships resident casualty officers, house physicians, and house surgeons resident anæsthetists; resident radiologist; bacteriologist, clinical pathologist pathological medical surgical obstetrical, and other registrarships. Thirty-one resident medical and surgical officers are appointed during each year

Post-graduate Courses—Two advanced medicine and two advanced surgery courses are held annually and are suitable for preparation for M.D M.S M.R.C.P and F.R C.S Examinations

An Evening Course for medical practitioners and senior students is held throughout the winter at 9 P.M on Thursdays.

An Intensive Course is held on the first Saturday and Sunday of the winter session for qualified members of the School and other practitioners

Scholarships—Those in connexion with King's College have already been enumerated Scholarships of the total value of £1530 are awarded annually These include (*a*) Medical Entrance Scholarships—Science £100 Anatomy and Physiology £100 Pathology £100 (*b*) two Burney Yeo Entrance Scholarships £105 each, open to students of Oxford and Cambridge on the recommendation of the Regius Professors; (*c*) two Raymond Gooch Scholarships

£105 each, open to students of British Universities on certain conditions , (*d*) Epsom College Scholarship, value £100, offered annually to a student of Epsom College who has taken the first part of the courses for Medical Degrees at the Universities of Oxford, Cambridge, or London , (*e*) two Seaman Scholarships, each £50 a year for a period not exceeding five years, restricted to the sons of clergymen of the Church of England , (*f*) Senior Scholarship (Clinical Studies), £40 The holders of the Warneford and Sambrooke Scholarships take the subjects of the preliminary and intermediate examinations at King's College, and the final subjects at King's College Hospital

Prizes —Tanner Prize, £10, Obstetrics and Diseases of Women , Todd Prizes, first £8 and medal, second £4, for Clinical Medicine , Burridge Prize, £4 4*s* , Forensic Medicine , Jocelyn Almond Prize, £5 5*s* , Diseases of Children, Wallis Prize, £10, Dental Surgery, The Ferrier Prize in Neurology, Bronze Medal and £20 , The Legg Prizes in Surgery and Surgical Pathology, Ware Prize for General Pathology, Cheyne Prize for Surgery Special Prizes for Diseases of Children, Orthopædic Surgery, and Urology Thirteen Class Prizes of £3

Clubs, Hostel, Athletic Ground —The King's College *Hospital Clubs and Societies Union consists of the* Listerian and Musical Societies, the Students' Common Rooms, and the various athletic and sports clubs The athletic ground, over six acres in extent, is on Dog Kennel Hill, about ten minutes' walk from the hospital There are also tennis courts in the grounds of the hospital and of " The Platanes "—the residence for students on Champion Hill The Library, in which there are facilities for quiet reading, contains 7000 bound volumes in addition to the medical and scientific periodicals

London Hospital

The hospital serves the east end of London, and with 850 beds is the largest voluntary hospital in England Students have the choice of five medical and five surgical firms, each firm consisting of two physicians or surgeons, a registrar, a house physician or house surgeon, about 50 beds and seven clinical clerks or dressers The number of students admitted each year is limited, so as to ensure that every student shall have an average of seven or eight beds allotted to him when acting as a clerk or dresser The out-patient department deals with 100,000 new patients per annum, and is extensively used for teaching. Three wards devoted to maternity and gynæcological cases, the " district " served by the hospital, and the neighbouring county council maternity centre for east London, afford exceptional opportunities for gaining experience in the practice of midwifery

The size of the hospital necessitates a large number of resident medical officers Every year 70 resident house physicians and house surgeons and 80 salaried non-resident clinical assistants are appointed As the school is relatively small the chances of a student gaining some of these appointments are considerable The honorary visiting staff numbers over 50 and all take their part in teaching The medical college attached to the hospital is staffed by professors of anatomy, physiology, bacteriology, chemical pathology, morbid anatomy and medicine of the University of London Special courses in anatomy and physiology for the primary F R C S and advanced courses in surgery for the final F R C S examination, and in medicine for the M D and M R C P examinations, are held twice a year

The medical college contains a modern museum of pathology and a library provided with all the current medical periodicals in charge of a full time librarian There is also an Athenæum Club and dining hall, a gymnasium a fives court and two squash courts in the students' hostel The athletic ground of 13 acres at Hale End is within easy distance of the hospital Although situated in the east end the hospital is only 20 minutes from Charing Cross and Baker street There is accommodation for 60 students in the hostel

Scholarships and Prizes —Entrance scholarships Price scholarship £100, subjects of first medical examination at the University of London , Epsom College scholarship, free education, subjects of first medical examination as above , scholarship of £50, in certain subjects of the preliminary examination in general education , Price scholarship, open to students of Oxford and Cambridge Universities, £100, human anatomy and physiology , two open scholarships, each of the value of £100, subjects, human morphology and embryology, physiology and pharmacology, biochemistry, pathology, bacteriology, and morbid anatomy Prizes Buxton prize, £40, subject of anatomy and physiology , H L B Haking prize in clinical obstetrics and gynæcology, £25 , Sutton prize, £20, pathology , Duckworth Nelson prize, biennial, £10, practical medicine and surgery , Letheby prizes (2), £25, chemistry and chemical pathology , four dressers' prizes, amounting to £20, zeal, efficiency, and knowledge of elementary clinical surgery , Hutchinson prize, triennial, £60, clinical surgery , F Treves prize, £20, clinical surgery , F N Charrington prizes in practical anatomy, £20, *Andrew Clark* prize, *£14*, clinical medicine and pathology , T A M Ross (prox acc) prize, £10 10*s* clinical medicine and pathology , James Anderson prizes (4), £20, elementary clinical medicine , Arnold Thompson prize, £15, diseases of children , and Liddle prize, triennial, £120

Medical Research Funds —Funds to the value of over £113,000 permit of financial assistance being given to students and graduates engaged in Medical Research

St Mary's Hospital

The hospital and medical school have on one side a poor district of 500,000 persons, one-tenth of whom, on an average, pass through the hospital annually On the other side are the residential districts of Kensington and Bayswater, making it possible for the student to live in touch with his work For many years the annual entry to the school has been restricted so that the clinical facilities offered by the hospital have not suffered from the large number of students who now wish to follow a medical career No student is accepted who has not passed the matriculation examination of a university

The hospital contains 478 beds, and recent structural additions have added two new operating theatres By a scheme of affiliation, for teaching purposes, of certain neighbouring hospitals, the teaching facilities extend over 1000 beds The medical school provides courses of instruction for the teaching of the entire curriculum, and students can join at once on passing a preliminary examination in arts Terms begin in October, January, and April

Clinical units in medicine and surgery were established in 1920 Under this system professors of medicine and surgery, with competent assistants, give their whole time to teaching and research The system also provides additional salaried posts which are open to students after qualification

The hospital has lying-in beds to which considerable additions have recently been made, and in addition to the instruction thus obtained each student attends a short course at Queen Charlotte's Hospital, as part of his training in midwifery, without additional fee

Students specially interested in pathology and bacteriology have singular advantages at St Mary's The institute comprises seven special departments, the whole being under the personal direction of Sir Almroth Wright. Research scholarships of £200 each are awarded annually to students working in the departments, and research beds have been instituted Clerkships in pathology, bacteriology, and chemical pathology, lasting for a period of three months, are open to students of the fifth year and enable them to carry out the pathological and bacteriological investigations of the wards, and learn the necessary technique under supervision. Seventy two of these posts are available annually Numerous appointments are open to newly qualified members of the medical school including seventeen salaried posts with salaries varying up to £750 per annum. A special post graduate course is held during the first week-end in October and is open to all general practitioners and other qualified men without fee

Entrance Scholarships and Prizes—The Harmsworth scholarship of £200 is awarded annually to a student of Oxford or Cambridge and other university scholarships to the value of £210 Open scholarships to the value of £480 are awarded annually by nomination and the Palmer scholarship is awarded in alternate years In addition to the class prizes other prizes include the Cheadle gold medal (£20 and medal), the Meadows prize in obstetrics the Wallace memorial prize, David Lees memorial prize Sir William Broadbent prize, Agnes Cope prize Malcolm Morris memorial prize Waller prize in physiology

The medical school and institute of pathology have been recently rebuilt at a cost of nearly £250 000 The buildings include a students club and restaurant with a swimming bath which opens on to a courtyard beneath which is a garage for 50 cars There is a squash rackets court and gymnasium with a boxing ring The medical school has recently acquired the old Merchant Taylors ground at Teddington The ground is 13 acres in extent and has a sandy subsoil so that it is dry even in the wettest winter There are two rugby pitches one for association football one for hockey and a cricket pitch. The ground has always had the reputation of being one of the best in the country There are six hard tennis courts.

Middlesex Hospital

The hospital and cancer wing contain over 592 beds, with special wards for cancer maternity gynæcological otological neurological, dermatological and ophthalmological cases and for diseases of children Other special departments include those for diseases of the eye, ear, nose and throat, and skin; nervous diseases genito-urinary and orthopædic cases diseases of the rectum, and venereal diseases There is also an electrotherapeutic department a newly equipped cardiographic department, and a department of radium therapy and research. Early in 1035 the Clinical Research Unit known as the Courtauld Wards, was opened for the reception of patients upon whom investigations of a pathological physiological or biochemical nature are conducted The cancer wing containing beds and special investigation laboratories offers unrivalled opportunities for the study of cancer, both in its clinical and pathological aspects In the electrotherapeutic department students obtain instruction in the treatment of lupus and cancer by the X ray method of treatment

The following appointments are made at intervals annually: eight house physicians, ten house surgeons two obstetric and gynæcological house surgeons, four casualty medical officers two casualty surgical officers, one senior resident anæsthetist, two junior resident anæsthetists four resident officers to the special departments two dental house surgeons and one clinical assistant to the Courtauld Wards Twelve registrars are appointed annually Non resident qualified clinical assistants are appointed to assist in the various out-patient departments Clinical clerks and surgical dressers are also appointed in every department

The medical school which includes the Bland Sutton Institute of Pathology the Courtauld Institute of Biochemistry the Barnato Joel Laboratories and the Ferens Institute of Otology is fully equipped for the theoretical and practical teaching of all the subjects of the medical curriculum and the University diplomas in radiology Ample laboratory and class room accommodation is provided. The teaching staff includes 0 professors 2 university readers 40 recognised teachers 10 demonstrators, 4 tutors. The Bland Sutton Institute of Pathology and the Courtauld Institute of Biochemistry are completely equipped for routine hospital investigations teaching and research work, and contain large pathological bacteriological and clinical laboratories, also smaller laboratories for individual research work. A well equipped pathological museum and reference library offer every facility

Other features of interest are the course in medical radiology and electrology under the direction of the Joel professor of physics and the honorary physician in charge of the X ray department Primary F R C.S courses are held twice yearly

There is newly built accommodation for students to live on the hospital site; this residential college affords separate bedrooms billiard room, &c

Scholarships and Prizes—Two Entrance Scholarships, value £100 each, and four University Scholarships, value £100 each, are awarded annually The successful candidates are required to become general students of the school. A Freer Lucas Scholarship is awarded annually on the nomination of the Headmaster of Epsom College. There are also two Broderip Scholarships, value £00 and £40 respectively; the Lyell Gold Medal and Scholarship value £55 5s, the John Murray Medal and Scholarship, value £25 (awarded every third year) the Freeman Scholarship value £30; the Hetley Clinical Prize, value £25 the Kingston Fowler Prize value £15; the Leopold Hudson Prize value 11 guineas; and the *Colin MacKenzie Prize, value 10 guineas.* There are numerous class prizes.

The Students Amalgamated Clubs include the following: Medical Society Common Room Society Musical Society cricket, football rowing lawn tennis hockey sailing golf fencing and swimming There are a restaurant and a gymnasium in the school buildings and athletic grounds at N Wembley Squash rackets are also available.

St Thomas's Hospital

This hospital consists of eight linked up pavilions the medical school building being separated from the hospital by a quadrangle; the school buildings comprise the department of anatomy with its lecture theatre museums research laboratory, and completely equipped X ray department, erected in 1035; the Sherrington School of Physiology and a newly rebuilt department of chemistry with physical and *biological laboratories.* The *hospital contains 614* beds and, in addition, has 30 beds at the Pyrford Orthopædic Hospital where a further 150 beds are available for teaching and 22 beds at the St Thomas's Babies Hostel students profit by liaison with Lambeth Hospital where demonstrations are arranged at regular intervals and senior students attend with facilities for clinical work. There is a Clinical Unit in medicine under a whole time director with laboratories and reading room attached which are open day and night.

A complete curriculum is provided for students, the hospital having departments for the treatment of all the specialties Particular attention is given to antenatal instruction and the teaching of diseases of children. A tuberculosis department in the hospital forms part of the Lambeth anti tuberculosis scheme The V D department is part of the L.C C scheme In each department much clinical material is available Instruction in anæsthetics takes place during appointment as dresser Private coaching facilities are available and final classes for the Primary F.R C.S Eng are held. Revision classes are held in anatomy and physiology in accordance with the medical curriculums of Oxford and Cambridge The obstetric training of students is supplemented by an arrangement with St James Hospital Balham whereby throughout the year two students at a time are in residence and take part in the maternity work. A special maternity ward of the hospital gives the student scope for elementary training before he undertakes cases in the district. In addition to the usual routine as clerk and dresser, every student works for a period of three months in the Medical Unit of the hospital. The post-mortem room, rebuilt in 1932, has a large amphitheatre adapted for teaching purposes and for the intimate study of morbid pathology.

The following appointments are open to students. A resident assistant physician and a resident assistant surgeon, salary £225 each per annum, and a resident anæsthetist, salary £200 per annum, are appointed annually. The assistants in the medical and surgical units hold appointments with a maximum tenure of four years. These officers are salaried. Three medical and four surgical registrars at a salary of £250 hold their appointments on a tenure renewable to a maximum of four years. A pathological registrar to the department of obstetrics and gynæcology (at an annual salary of £250), an ophthalmic registrar (at an annual salary of £200), and an orthopædic registrar (unpaid) are appointed yearly. Nine chief assistants (unpaid) are appointed to the special departments. Eight resident casualty officers and anæsthetists are appointed every six months. Seven house physicians (including two obstetric house physicians and one house physician to the department of diseases of children), nine house surgeons (including two ophthalmic house surgeons, one orthopædic house surgeon, and two house surgeons to the ear, nose, and throat department) are appointed every six months. Clinical assistants in the special departments are appointed every three months, and hold office for six months if recommended for re election. There are three assistants in the department of pathology the senior receives £600 a year, and the two juniors £450 each.

Scholarships and Prizes.—At this school there are the following Entrance Scholarships. Two in Natural Science, of the value of £150 and £60 respectively, and the University Scholarship of £100 in any two of the following—Anatomy, Physiology, Pathology, Chemistry, also the "Hector Mackenzie" University Exhibition of the value of £60. The value of all entrance scholarships is taken out in tuition fees. The money value and subjects of examination of the remainder are as follows (*a*) William Tite Scholarship for second-year students, £25, (*b*) and (*c*) Musgrove Scholarship or (alternately) Peacock Scholarship each for third-year students and tenable for two years, £35 each, (*d*) Mead Medal, Medicine, Pathology, and Hygiene, (*e*) Wainwright Prize, Medicine, (*f*) Toller Prize, Medicine, (*g*) Cheselden Medal, Surgery and Anatomy, (*h*) Clutton Memorial Medal in Clinical Surgery, biennial, (*i*) Beaney Scholarship, £50, biennially, Surgery and Surgical Pathology, (*j*) Solly Medal and Prize, biennial, Reports of Cases, (*k*) Sutton Sams Prize, biennial, Report of Cases, (*l*) Bristowe Medal, Pathology and Morbid Anatomy, (*m*) Hadden Prize, Pathology and Morbid Anatomy, (*n*) Grainger Testimonial Prize, £31 10*s*, Anatomy and Physiology, (*o*) Louis Jenner Research Scholarship, tenable for two years, £60 annually, Pathology, Perkins Research Fellowship, £40–£100, Myers Prize in Psychological Medicine, £10 10*s*, Planck Prize in Psychological Medicine, £35.

In the school buildings are a reading-room and library, containing approximately 8500 volumes. There is here a selection of new editions of current text-books, and periodical literature suitable to the needs alike of students and research workers. The Shattock museum, which forms part of the buildings, contains over 5000 preparations, illustrating all morbid lesions of importance, an illustrative type series, and many specimens of historical interest. In the west wing of the school are the pathological institute and photographic department.

Opposite the hospital is St Thomas's House the premises of the amalgamated clubs, providing all the usual amenities and having squash courts, a miniature rifle range, and ample garage accommodation. There is a hard tennis court in the quadrangle. The hostel in the same building accommodates 50 resident students. All field games are provided for and there is a sports ground at Chiswick with one of the best cricket pitches in the country.

University College Hospital

Instruction in the preliminary scientific subjects is given at the college. The final subjects in the curriculum are taught at the medical school of the hospital, which has 617 beds, including 85 in the obstetric hospital and 77 in the new private patients' wing. Clinical Units in medicine, surgery, and obstetrics and gynæcology are now in operation. The whole-time directors of the Units are concerned with the organisation of the teaching generally, but the honorary staff are responsible for the largest share of the teaching in the wards and out-patient department of the hospital. The department of otology, rhinology, and laryngology (the Royal Ear Hospital) has been provided with a separate building in Huntley-street, adjacent to the obstetric hospital. It contains 41 beds, including eight private wards for patients of limited means. In the dental school in Great Portland-street there is afforded the opportunity for attending lectures and practical instruction in diseases of the mouth and teeth.

The hospital is equipped with all modern appliances for investigation. The new buildings of the obstetric hospital of 85 beds (rendered possible by the Rockefeller Benefaction), the new residents' house (with accommodation for 30 residents and students), the extension to the nurses home, and new research laboratories for the medical school are now finished and in full occupation. Twelve women students are admitted annually. Among the most recent developments are the following —(i) The new private patients' wing with 77 beds, all of which are in single rooms with the exception of two four-bed wards. This wing has the very latest medical equipment, together with all possible devices for the comfort of patients. (ii) An entirely new and up to-date X ray diagnostic department. (iii) New ante-natal, gynæcological and child welfare out-patient departments. The opportunity has been taken to transfer the present children's out-patient department to the new extension, thus securing the obvious advantage of easier coöperation.

Original research in all subjects can be pursued in the laboratories of the school under the professor of pathology, and students can receive grants under certain conditions from the Charles Graham Medical Research Fund.

Clerkships and dresserships to the physicians, surgeons, anæsthetist, and pathologist are allotted amongst the students of the hospital. Maternity students are appointed each month and reside in the Students' House connected with the medical school and hospital. Sixteen house physicians, ten house surgeons, ten obstetric assistants, four house surgeons to the Royal Ear Hospital, are selected annually by examination from among the senior students who have a medical qualification. All house officers reside free in the hospital. In addition to these posts there are certain special appointments which are vacant from time to time and are filled by senior students of the hospital resident medical officer surgical registrar, medical registrar, obstetric registrar, Harker-Smith cancer registrar ophthalmic registrar, registrar to the Royal Ear Hospital, radiological registrar, casualty medical officer and a casualty surgical officer, first assistant in the children's department; assistants in ear, nose and throat, ophthalmic, skin, and venereal diseases departments and in the department of psychological medicine, and house anæsthetist.

Assistants to Medical, Surgical, and Obstetric Units. These salaried appointments are for senior students who may desire to remain at hospital after holding the ordinary resident appointments continuing clinical work or pursuing *laboratory or other research* The salaries range from £250 up to £000 a year resident quarters being provided only for the chief assistant to the Obstetric Unit. The total number of such assistantships varies from time to time, being generally about 12 and an aggregate sum of about £5000 annually is available for their salaries

Scholarships and Prizes (those in connexion with University College have already been enumerated)—At this School the first two Scholarships (*a*) and (*b*) entitle the holder to a complete course at University College and University College Hospital Medical school; the second two (*c*) and (*d*) entitle to a final course at the medical school The money value and subjects of examination are as follows: (*a*) Entrance Scholarship Bucknill, 60 guineas Chemistry Physics, Botany and Zoology, (*b*) Epsom Free Medical Scholarship, subjects of Preliminary Scientific Examination and Nomination by Epsom Collège (*c*) and (*d*) two Goldsmid Entrance Scholarships entitling the holder to the Final Course of Medical Study two of the following subjects: Anatomy, Physiology, General Pathology Biochemistry; (*e*) Goldsmid Entrance Exhibition entitling the holder to a reduction by £80 in the fees due for the full course of Final Medical Studies, two of the following subjects: Anatomy Physiology General Pathology Biochemistry; (*f*) Filliter Entrance Scholarship entitling the holder to a reduction by £52 10*s* in the fees due for the full course of Final Medical Studies Students need take Pathology alone if they desire to enter for the Filliter Entrance Scholarship only; (*g*) Ferriere Scholarship value £25; (*h*) Graham Scholarship in Pathology £300 per annum for two years awarded by the Senate of the University of London (*i*) Atkinson Morley Scholarship tenable for three years £45 per annum Surgery; (*j*) Atchison Scholarship tenable for two years £55 per annum General Proficiency in Medical Studies; (*k*) Magrath Clinical Scholarship about £100 Clinical Cases; (*l*) Percival Alleyn Scholarship about £300 awarded every three years Surgery; (*m*) Filliter Exhibition £30, Pathology (*n*) Erichsen Prize £21 Practical Surgery, (*o*) two Senior and two Junior Fellowes Clinical Medals for Clinical Medicine; (*p*) two Liston Gold Medals for Clinical Surgery (*q*) Alexander Bruce Gold Medal for Pathology and Surgery (*r*) Tuke Silver and Bronze Medals for Pathology; (*s*) Radcliffe Crocker Travelling Scholarship for Dermatology and (*t*) Leslie Pearce Gould Travelling Scholarship for Surgery Bilton Pollard Fellowship of the annual value of £050 tenable for a normal maximum of three years A limited number of Bursaries are available from the Atchison Fund awarded at the discretion of the Dean to enable students whose means do not allow to take Resident Posts. The Arthur Pollard Loan Fund for the purpose of assisting necessitous students either by the payment of their tuition or examination fees or as a grant towards their maintenance

The Museum of Pathological Anatomy is open for study daily The Anatomical Museum of the University of London University College, is open to all students of University College Hospital and Medical School on the recommendation of the school committee The library open daily to every student of the School, contains about 30 000 medical works, including all the current text-books and works of reference

The Medical Society exists for the dual purpose (1) of promoting the study of medical and surgical science, and (2) of promoting social intercourse among its members All male students of the medical school are required to become members and meetings are held once a fortnight for appropriate discussion connected with the study of medicine. The Society includes various athletic clubs and superintends the gymnasium and squash racquet courts in the medical school and the athletic ground at Perivale.

In Gower-street there is a well-equipped residential hostel solely for the use of the medical students.

Westminster Hospital

The present hospital contains 241 beds, and has attached to it a Radium Clinic with 22 beds elaborately equipped for all forms of radium therapy and research In the new Westminster Hospital which is at present being constructed there will be 400 beds with separate departments for diseases of the eye skin teeth ear, nose and throat for orthopædic practice for diseases of women for diseases of children, for radiology for anæsthetics, for venereal disease and for massage electrical, and light treatment. The anatomical pathological and materia medica museums are open to all students of the school There is also being built a new medical school adjacent to the new hospital in Horseferry road Westminster; this will be ready for occupation in January 1938 and will contain the very latest developments in medical teaching accommodation

The entire teaching of the hospital is devoted to the subjects of the Final Examinations. Arrangements are made for the tuition required for Preliminary and Intermediate subjects.

Paid appointments as medical surgical and obstetric registrars, casualty officers house physicians house surgeons, and anæsthetist are available for students when they have passed their examinations

There are excellent opportunities for research work in the recently endowed John Burford Carlill Laboratories. Grants to assist research workers are made annually from the John Burford Carlill Endowment.

Scholarships and Prizes—The following Entrance Scholarships are offered for competition: Winter Session: Two Scholarships in Anatomy and Physiology £75 each. Summer Session: Two Scholarships in Anatomy and Physiology £75 each. Four Scholarships in Chemistry, Physics, and English Essay £75 each During the period of study the following prizes may be competed for: Sturges Prize in Clinical Medicine Reports on Cases; Chadwick Clinical Surgery Prize Reports on Cases; Chadwick Prize in books or instruments—Medicine and Surgery, including Pathology and Applied Anatomy and Physiology; Frederic Bird Medal and Prize open to fourth year students, medal and books or instruments—Midwifery Diseases of Women Medicine, Pathology Forensic Medicine and Bacteriology and Public Health and Toxicology; Abrahams Prize in Clinical Pathology, a paper and tests in practical work; Hanbury Prize in Diseases of Children; Alfred Hughes Memorial Prize open to second year students, books or instruments—Anatomy; Huxley Memorial Prize open to second year students—Physiology; Carter Gold Medal and Prize for Botany open to students of not more than three years attendance, gold medal and books; Jelf Medal awarded to third year students Daniell Scholarship £40, Chemistry Rabbeth Scholarships open to first-year students; Class Examinations in the Preliminary Scientific Course Inchley Prize in Pharmacology open to students who within two years of passing the first examination for medical degrees have completed the course in Pharmacology Hare Prize in Zoology, open to first-year students

The annual fee includes membership of the Sports Union Club with its various branches—i.e football cricket tennis, hockey boxing fencing swimming sailing and Guthrie Society The athletic grounds are situated in Tooting and are reached in 20 minutes from the hospital

London (Royal Free Hospital) School of Medicine for Women

The Royal Free Hospital contains 327 beds. The hospital also has large casualty and out-patient departments. Maternity districts are attached to the obstetric unit operating in the Gray's Inn road and Essex road areas Students in midwifery and gynæcology attend the in and out-patient practice of the

Elizabeth Garrett Anderson Hospital. They also attend the practice of the Royal Cancer Hospital, Hospital for Sick Children, Great Ormond street, National Hospital, Queen square, South London Hospital, and Central London Ophthalmic Hospital. Students after qualification can hold posts of house physicians, house surgeons, obstetric assistants, clinical assistants, assistant anæsthetist and pathologist, and medical, gynæcological, and surgical registrars at the Royal Free Hospital; and the post of demonstrators in all the departments at the medical school.

A clinical unit in obstetrics controls 68 beds. The pathological unit has been extended and spacious new quarters are now available.

Courses are arranged for the primary fellowship examination of the Royal College of Surgeons of England.

The school buildings have been entirely rebuilt in recent years, and there are spacious, well equipped laboratories, which afford every facility for efficiency of teaching and practical work in all departments. Students' chambers are provided in the neighbourhood of the school and the warden can be consulted on the subject.

Scholarships and Prizes.—Among the larger of these awards are the following: (*a*) Isabel Thorne and A. M. Bird Scholarships of £30 a year for six years; (*b*) St. Dunstan's Medical Exhibition, £60 a year for three or five years; (c) Mrs. George M. Smith Scholarship, £50 a year for three or five years; (*d*) Bostock Scholarship, £90 a year for five years; (*e*) Mabel Sharman Crawford Scholarship, £20 a year for four years; (*f*) Sir Owen Roberts Scholarship, £75 a year for four years, alternating with the MacIntyre Evans Scholarship of £75 a year for four years; (*g*) Fanny Butler Scholarship, £16 a year for four years; (*h*) Sarah Holborn Scholarship £20 a year for three or five years; (*i*) Dr. Margaret Todd Scholarship, £37 a year for four years; (*j*) Lieutenant Edmund Lewis and Lieutenant Alan Lewis Memorial Scholarship, £25 a year for four years; (*k*) Alfred Langton Scholarships £35 a year for two years; (*l*) Flora Murray Bursary, awarded every year to a fifth-year student, £50; (*m*) A. M. Bird Clinical Scholarship, £30 a year for three years; (*n*) School Jubilee Bursary, £50 a year for three years; (*o*) John Byron Bursary, £20 for two years; (*p*) Beilby Bursary of £55 for one year; (*q*) Helen Prideaux Prize and Julia Ann H. Cock Prize to be spent in assisting the newly qualified holder to further study, £60 each; (*r*) A. M. Bird Post-graduate Scholarship in Pathology, £200 for one year; (*s*) Mabel Webb and A. M. Bird Research Scholarship, £200 for one year; (*t*) Dr. Edith Pechey Phipson Post graduate Scholarship of the value of £100 open to all medical women, preferably coming from India or going to work in India. The Dorothy Chick Gift £14, and other prizes value £84 are awarded annually. The Students' Union arranges the social, athletic, and other clubs and societies.

Inquiries may be addressed to and full particulars obtained from the Deans of the respective medical schools.

BRITISH POSTGRADUATE MEDICAL SCHOOL

The school was opened by His late Majesty King George V. on May 13th, 1935. With it is associated the London County Council hospital, generally known as the Hammersmith Hospital, which is situated in Ducane road, W. 12. Originally a much larger institution was contemplated and Parliament and the L.C.C. had each voted £250,000 for its building and equipment. Unfortunately the financial crisis in 1931 necessitated modification of the plans and a reduction in the amount of the grant by these two bodies. A sum of nearly £200,000 has been spent on the building and equipment of the school, and improvements in the hospital to meet the requirements of a teaching hospital.

The school is situated in the grounds of the Hammersmith Hospital at Ducane-road. These grounds cover 14 acres and provide ample room for further building. Ducane-road runs parallel to Western-avenue, to the south of a large area of open ground known as Wormwood Scrubs, which can never be built over. On the west lies the prison, and the extensive plot on the east belonging to St. Clement Danes Grammar School will also remain open. During the last year additional laboratories and accommodation for professors have been provided.

The Board of Governors of the Postgraduate School, as prescribed in its Charter, is made up of representatives of various interested bodies, and at present consists of 19 members under the chairmanship of Sir John Caulcutt. These are nominated by the Secretaries of State for Dominion Affairs, India, and the Colonies, the Ministry of Health, the London County Council, the University of London, the English Royal Colleges, the Society of Apothecaries of London, the Royal Society of Medicine, and the British Medical Association; five additional Governors are coopted.

The school has been recognised as a school of the University of London, and all appointments of professors and readers are made by that body. It is open equally to men and women.

The school provides facilities for: (1) students from the Empire and abroad who desire post-graduate work in medicine, surgery, obstetrics and gynæcology, pathology, and radiology; (2) newly qualified students who are preparing for higher examinations or specialising in one of the above branches; (3) research students who are given facilities for research; (4) short refresher courses are provided for general practitioners, but more especially for those insurance practitioners receiving assistance from the Ministry of Health.

The new block, in which is housed the medical school, consists of three floors around a central courtyard. On the ground floor is the clinical theatre, with seating room for 100 students, directly abutting on the main east-west corridor of the hospital, with a room for a cinema operator on the one side and examination rooms for patients on the other. On the north side of this floor is a very complete morbid histology department. On the first floor are the library and museum, as well as a second lecture theatre which lies over and duplicates the clinical theatre below. On the third floor is the bacteriological department.

The work of the school is divided into five departments: medicine, surgery, obstetrics and gynæcology, pathology, and radiology. Each is in charge of a director. With the exception of radiology, the directors are professors of the University of London and appointed by the University. They are assisted by readers and a varying number of assistants. These are all whole time members of the staff and are not engaged in private practice. There is also a visiting staff who either take charge of wards or give special courses of lectures on subjects to which they have given special attention.

The refresher courses are held at regular intervals and not less than six courses are held per annum. The subjects dealt with in these courses are selected mainly from subjects mentioned in the B.M.A. memorandum and those which have been found from experience to be of value to the general practitioner. Lecturers taking part in these courses include not only the school staff, but selected lecturers from other teaching schools, and for special subjects, visits are arranged to the special hospitals in London.

Apart from the special courses, graduates who have the time available join the school for "hospital practice and tuition." Such students attend from 10 A.M. to 4 P.M. Clinics are held daily. Students have every opportunity of examining and studying cases under expert guidance, and of receiving tuition thereon. They also attend the regular conferences between the different departments and the radioogical and pathological demonstrations which are held weekly

At the hospital a new surgical and maternity block has been provided and a large out patient department The responsibility for the care of patients rests with the L C C and while the proper duty of the school is teaching, the two functions are in practice inseparable The staff of the school therefore provides the hospital staff so far as the professional care of patients is concerned The school depends for its main income on grants from the Treasury

Further information can be obtained from the dean of the school

UNIVERSITY OF DURHAM: KING S COLLEGE

There are two degrees in Medicine *M.B B.S* and *M.D* two in Surgery *M.S* and *D Ch* The University also gives degrees or diplomas in *Dental Surgery Hygiene and Public Health and Psychiatry*

Medical students may prepare for the pre-registration examination in chemistry and physics at Armstrong College Students who have taken a degree in science and wish subsequently to proceed to a degree in medicine will receive the proper exemption

For the degrees of *Bachelor of Medicine* and *Bachelor of Surgery* there are four professional examinations The subjects of the First Examination are—Elementary Biology and Chemistry in relation to medicine The subjects of the Second Examination are—Anatomy and Physiology The subjects of the Third Examination are—Pathology and Bacteriology Materia Medica, Pharmacology and Pharmacy Medical Jurisprudence and Public Health The subjects of the Fourth Examination are—Medicine, including Therapeutics Clinical Medicine Surgery Clinical Surgery Operative Surgery, Midwifery and Gynæcology Psychological Medicine, Diseases of the Skin, of the Throat, Nose, and Ear and of Children, and Ophthalmology The University requires that at least three years be spent in residence in the University In certain cases candidates may obtain exemption from the First and Second examinations but the later professional examinations must be passed in the University

For the degrees of *Doctor of Medicine* and *Master of Surgery* a candidate must not be less than 24 years of age. He must have obtained the bachelor degrees of the University and been engaged for two years subsequently to the date of admission to these degrees in research work, or in attendance on the practice of a recognised hospital or in the naval or military services or in medical or surgical practice The candidate for the M.D degree may present an essay or undergo a special examination in the subjects of Medical Anatomy Medical Pathology and the Principles and Practice of Medicine. The subjects of examination for the M S are—Principles and Practice of Surgery, Surgical Pathology Surgical Anatomy Surgical Operations Clinical Surgery

Doctor of Surgery—Candidates must be registered medical practitioners and not less than 25 years of age and must devote three years subsequently to obtaining a registrable qualification to the study of Surgery one at least to be spent in the University The course of study of the candidate must be submitted to the Professor of Surgery and approved by the Board of the Faculty One year shall be devoted mainly to work in the departments of Anatomy Physiology Pathology and Bacteriology and the candidate must submit evidence of having so worked Not less than six months of another year must be spent as resident surgeon in a recognised teaching hospital and the rest of the year in the study of surgery in a recognised medical centre Not less than six months of one of the three years must be spent in surgical study abroad

Candidates must give six weeks notice of entry for all examinations to the Secretary of Examinations, the medical school King s College Northumberland road, Newcastle-upon-Tyne The M D (essay) must be sent in before April 1st

Scholarships and Prizes—The following are awarded: University of Durham Entrance Scholarship £25 a year for four years; Pears Entrance Scholarship £10 a year for three years (awarded every third year) Heath Entrance Scholarship (from Kepier Grammar School) £60 (renewable); Province of Durham Masonic (Entrance) Scholarship £60 (renewable); Heath Scholarship for Surgery £200, available every second year; Rutherford Morison Surgical Scholarship £180, available every third year Approved applicants may obtain special grants for surgical research from the Stephen Scott Research Fund and Heath Surgical Research Fund for research in asthma, &c, from the William Dodds Research Fund and for research in dental science from the Parker Brewis Dental Research Scholarship Fund

The following Scholarships are tenable for one year namely: Tulloch Scholarship for Elementary Biology and Organic Chemistry, £20; Dickinson Scholarship for Medicine Surgery, Midwifery, and Pathology £20; Charlton Scholarship for Medicine £25 Gibb Scholarship for Pathology, £28; Luke Armstrong Scholarship for B.Hy and D.P.H (Part I) Examination in Bacteriology £25; Stephen Scott Scholarships for Anatomy and Physiology two of £50 each Philipson Scholarships for highest marks in Final M.B, B.S Examinations, two of £45 each Goyder Memorial Scholarship for Clinical Medicine and Clinical Surgery, interest on £325 Hamilton Drummond Scholarship in aid of research in Clinical Surgery about £50; Gibson Prize for Midwifery and Diseases of Women and Children £10; Turnbull Prize and Silver Medal for Surface Anatomy; Outterson Wood Prize for Psychological Medicine £10; Sewell Memorial Prize and Silver Medal for Clinical Pathology; Sir Thomas Oliver Prize and Silver Medal for the Physiology of Food and Nutrition; and Ranken Lyle Prize and Silver Medal for Clinical Midwifery

Newcastle upon Tyne Medical School King s College*

Hospital practice and post-graduate work are carried out at the Royal Victoria Infirmary a general hospital containing 700 beds and there are facilities for the study of the various special subjects Post graduate work as well as voluntary courses for undergraduates can be pursued at the Newcastle General Hospital

Practical midwifery can be studied at the Princess Mary Maternity Hospital which contains 90 beds with an annual indoor and outdoor attendance on 3000 cases

Psychological medicine can be studied at the Newcastle Mental Hospital and infectious diseases at the City Hospital under the M O.H. of the city

The bacteriological laboratory is housed at present in other buildings of King s College

Post-graduate Instruction.—1 General courses in Clinical Medicine Surgery and Pathology at the Royal Victoria Infirmary meeting once weekly for ten weeks One course is held from October to December and one from April to June 2 Special courses of clinical instruction, meeting once weekly for ten weeks, in the following subjects: Gynæcology Diseases of the Eye; Diseases of the Throat Nose and Ear; Diseases of the Skin; Venereal Diseases Neurology; Diseases of Children; Electrotherapeutics and Radiology; special courses in Midwifery are held at the Princess Mary Maternity Hospital 3 An intensive course of 14 days duration in the Summer Vacation. 4 In addition to the regular post-graduate courses practitioners may attend the ordinary medical and surgical practice of the Royal Victoria Infirmary also at the Princess Mary Maternity Hospital for specified periods, and for clinical instruction at Newcastle General Hospital

There is a well furnished Students Union for the students of the Newcastle Division of the University

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Formerly the University of Durham College of Medicine.

and special accommodation has been provided for women students

The clinical work is done mainly at the

Royal Victoria Infirmary

The infirmary has over 700 beds Clinical lectures are delivered by the physicians and surgeons weekly and ward demonstrations are given daily Tutorial classes are given by the assistant physicians, assistant surgeons, the medical and surgical registrars, and the assistant to the gynæcological department, and demonstrations are given in the several out-patient departments daily Pathological demonstrations are given by the pathologist daily or as opportunity occurs In addition to medical and surgical in-patient and out-patient departments the following special departments are fully equipped for teaching ophthalmic, throat, nose, and ear, skin, and venereal disease, gynæcological, orthopædic, and electrical The hospital building contains the following laboratories 1 Special pathological laboratories attached to the post-mortem rooms 2 Bacteriological laboratory in which all clinical bacteriological investigations are carried out 3 There is in addition a clinical laboratory attached to each ward and to the out-patient department There are five operating theatres in use in the hospital The winter session of 1937 opens on Oct 5th, and the summer session of 1938 on April 21st.

Applications for detailed information should be made to the dean of the medical school

Appointments of assistants in the pathological and other special departments and of clinical clerks and dressers are made periodically Resident appointments are also made every six months, and each year medical and surgical registrars (who also act as tutors) are appointed from candidates who have previously held resident appointments at any recognised hospital These latter posts afford an excellent opportunity for post-graduate study, not only at the Infirmary, but also in the departments of anatomy, physiology, pathology, and bacteriology of the college

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UNIVERSITY OF BIRMINGHAM

This is a notable year for the Birmingham medical school, which is to move from the centre of the city to Edgbaston, adjoining the new hospital, next autumn at latest

The University of Birmingham grants the degrees of *M.B*, *Ch.B*, *M D*, *Ch M* There is also the degree of *Ph D* (for *Research Study*), a degree of *M.D*, (*State Medicine*), and a diploma in *Public Health* The Senate may recognise courses of study and examinations at other Universities in Physics, Chemistry, Biology, and Organic Chemistry, but at least three years must be spent in attendance upon classes in the University The final year may be spent at any other medical school recognised by the University

Degrees of Bachelor of Medicine and Bachelor of Surgery —The student must have passed the Matriculation Examination of the Joint Board or an examination accepted in lieu thereof Before commencing the study of Anatomy and Physiology, examinations in Chemistry and Physics and Biology must be passed (First M.B, Ch.B), or examinations in lieu thereof All communications respecting the Matriculation Examination, and examinations accepted in lieu thereof, must be sent to the Secretary, Joint Matriculation Board, 315, Oxford-road, Manchester Second Examination —Part I, Organic Chemistry, Part II, Anatomy and Physiology Third Examination —General Pathology and Bacteriology Fourth Examination (at the end of the fifth year)—Forensic Medicine and Toxicology, Public Health, and Materia Medica, Pharmacology, and Therapeutics Two years' hospital work must have been accomplished Final Examination —Medicine Surgery, Midwifery and Diseases of Women, Mental Diseases, and Ophthalmology Attendance at a general hospital for a year after the passing of the fourth examination will be required, also attendance at a fever hospital three months, maternity hospital three months, and mental hospital three months Vaccination instruction must be taken and courses of Ophthalmology, Venereal and Skin Diseases, and Diseases of Ear, Nose, and Throat, Medical and Surgical Anatomy, and Operative Surgery Distinctions may be awarded in the subjects (severally) of the Second, Third, Fourth, and Final, and First- and Second-Class Honours in the Final Examination

Degrees of Doctor of Medicine and Master of Surgery One year after having passed the final M.B, Ch B examination the candidate can present himself for these higher degrees They present a thesis on some medical or surgical subject, and pass a general examination in Principles and Practice of Medicine for the M D and one in Principles and Practice of Surgery, including operations on the cadaver, for the Ch M, or, at the discretion of the examiners, in a special branch of Medicine or Surgery respectively A thesis of exceptional merit may exempt from any part of these examinations, in which Honours may be awarded

Degree of Ph.D —Candidates must possess a medical degree of a British, Colonial or other university approved of by the Senate of the University, and have been engaged as a rule in advanced study for two years, either in a laboratory of the University or in one or more of the hospitals associated with the University But under approved conditions after the first year research may be carried on elsewhere, when, on completing the course, candidates present a thesis and submit themselves for oral and possibly written examination

Scholarships and Prizes—The following are awarded —Entrance Scholarships (*a*) Frank Fletcher and Catherine Fletcher Scholarships of £100 per annum each, for five years Two or more offered annually, open to men and women students under certain prescribed conditions as to residence, &c., (*b*) Sydenham Scholarship of £42, tenable for three years, award of Council to orphan sons of medical practitioners, (*c*) Sands Cox Scholarship of £21 per annum during two years, awarded to the candidate, not being more than 19 years of age, taking the highest marks at the Higher School Certificate Examination of the Joint Matriculation Board, (*d*) Dental Scholarship of £46 17*s* 6*d*, Open Competitive Examination in subjects learned during apprenticeship, (*e*) Myers Travelling Studentship of £300, tenable for one year, offered in alternate years, awarded by vote of committee to M B, Ch.B candidates, tenable at some University or Hospital not in Great Britain or Ireland, (*f*) two Ingleby Scholarships of £10 each, awarded to the candidates at Final Examination obtaining highest marks in the subjects of Midwifery and Diseases of Women, (*g*), (*h*), (*i*), and (*j*) four Queen's Scholarships of £10 10*s* each, awarded to the candidate taking the first place in the Second, Third Fourth, and Final Examinations respectively, provided that the candidate's work is sufficiently distinguished, (*k*) Priestley Smith Prize in Ophthalmology, value about £6 10*s*, is awarded annually to the student passing the Final M.B, Ch.B Examination on first entry who shows the best knowledge of Ophthalmology, provided the Examiners deem him worthy of this distinction, (*l*) George Henry Marshall Scholarship of £10, awarded annually, for the encouragement of Research Work in Ophthalmology, and (*m*) Russell Memorial Prize, a prize of books, value about £2, awarded annually to the student who, not being of more than six years' standing as a student of the School of Medicine of the University, shall pass the best examination in the subject of Nervous Diseases The "Arthur Foxwell Memorial Medal" (Gold Medal) is awarded annually to the candidate taking the highest place in Clinical Medicine and passing the Final M.B, Ch B Examination in June, the "Sampson Gamgee Memorial Medal" (Gold Medal for Surgery) is awarded annually to the best candidates passing Final M.B Ch.B Examination in June in Surgery (paper, oral and clinical); the Leith Newman Prizes for Pathology, £10 (Medical) and £5 (Dental), are offered annually on the year's work and examinations; Peter Thompson Prize for Anatomy (Third Year) Bertram Windle Prize for Special Work in Anatomy (value £10) and John Barritt Melson Gold Medal for Physiology (Third Year) The Board of Clinical Studies of the Faculty of Medicine awards Gold and Silver Medals on examinations in Medicine, Surgery and Midwifery respectively in fourth fifth and sixth years, open to all students

Post-graduate Instruction—Ingleby Lectureship (endowed)—Two post-graduate lectures on a subject relating to midwifery and diseases of women and children are delivered annually (no fee) 'William Withering Lectureship (endowed): a course of four lectures is given annually for post-graduates on subjects chosen from year to year (no fee) Post-graduate courses of clinical demonstrations for general practitioners are arranged annually by the Board of Clinical Studies (April to July) at the Birmingham United Hospital (General and Queen's) and the Children's Hospital.

The students receive clinical instruction by attending the amalgamated practice of the General Hospital Queen's Hospital Maternity Hospital, Children's Hospital, Birmingham and Midland Eye Hospital Mental Hospital and Fevers Hospital under the direction of the Board of Clinical Studies Appointments are open to students varying from £10 to £200 a year

Queen's Hospital

There are 330 beds. Ward rounds and out-patient clinic classes are held daily and regular tutorial classes throughout the session. Post-graduate courses arranged by the University are conducted every year There are special departments in gynæcology diseases of the eye of the ear nose, and throat dentistry dermatology radiology pathology bacteriology, biochemistry physiotherapy electrocardiography, and there is a psychiatric clinic associated officially with the Birmingham Mental Hospitals. There are also large wards for midwifery and postnatal cases, a nursery for instruction in infant welfare, an extensive midwifery district, and residential facilities for students. There are 31 resident appointments (inclusive of registrars) available each year for recently qualified students

Birmingham General Hospital

There are 485 beds Special wards for children, gynæcological, ear and throat venereal and radium cases; special beds for eye and skin cases Laboratories for bacteriology biochemistry cancer research and morbid histology Separate rooms adjoin the medical and surgical wards for clinical pathology Six operating theatres (one for out-patients and one for casualty department which is a separate department) are all of them fitted on modern lines In addition to clinical teaching given in the wards and out-patient department by the honorary staff medical and surgical tutorial classes are held for senior and junior students Clinical instruction in all the special departments, which include those for deep X rays, radium electrotherapy, electrocardiographic investigation and venereal diseases Post-graduate classes are held in every branch of medicine and surgery The Jaffray Branch Hospital contains 64 beds.

UNIVERSITY OF LIVERPOOL

The degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (*M.B* and *Ch.B*) Doctor of Medicine (*M.D*) Doctor in Philosophy (*Ph.D*) Master of Surgery (*Ch M*), and Master of Orthopædic Surgery (*M Ch Orth*) There is a diploma in *Medical Radiology and Electrology* (*D M.R.E*)

Degrees of Bachelor of Medicine and Bachelor of Surgery—Candidates for the degrees of Bachelor of Medicine and of Surgery must have attained the age of 22 years on the day of graduation. At least three of the six years of medical study must have been passed in the University, at least two of which must have been passed in the University subsequent to the date of passing the First Examination The other three years may be passed at any college or medical school recognised for this purpose by the University Candidates must pass three examinations entitled respectively: the First Examination the Second Examination and the Final Examination The subjects of the First Examination are (1) Chemistry (2) Biology (Zoology and Botany) (3) Physics The subjects of the Second Examination are (1) Anatomy; (2) Physiology (including Biochemistry and Histology) The subjects for the Final Examination are (I) (*a*) Pathology, (*b*) Pharmacology and General Therapeutics (II) (*a*) Forensic Medicine and Toxicology, (*b*) Public Health; (III) (*a*) Obstetrics and Gynæcology (*b*) Surgery Systematic Clinical Operative and Practical including Ophthalmology (*c*) Medicine, Systematic and Clinical including Therapeutics Mental Diseases and Diseases of Children Candidates may take Parts (I), (II) and (III) separately, provided that they do not present themselves for Part (III) until they have completed the sixth year of medical study and have passed the examination in Parts (I and II)

Degrees of Doctor of Medicine and Master of Surgery No candidate will be admitted to the degree of Doctor of Medicine or Master of Surgery unless he has received the Degrees of Bachelor of Medicine and Bachelor of Surgery (Liverpool) and at least two years have elapsed since he passed the examinations for those degrees A candidate may also take the degree of Doctor of Medicine by examination after five years from taking Liverpool M.B Ch B in (*a*) Medicine, together with (*b*) a selected branch of Medicine A candidate for the degree of Doctor of Medicine who elects to present a thesis, is required (*a*) to present a thesis certified to be the candidate's own work, together with (if the candidate desires) copies of published original papers upon Medical Science and (*b*) if the thesis is accepted by Faculty (after report from the Assessors) to present himself for an oral examination on the subject of the thesis

The subjects of examination for the Degree of Master of Surgery are: Surgery Clinical Surgery Operative Surgery Surgical Pathology and Bacteriology and Surgical Anatomy

Degree of Master of Orthopædic Surgery—May be conferred on graduates in Medicine of Liverpool or other approved University and graduates of a Faculty other than Medicine of Liverpool or other approved University who are Fellows of the Royal College of Surgeons of England Edinburgh or Ireland or of the American College of Surgeons

The University also awards Diplomas in Medical Radiology and Electrology Public Health Tropical Medicine and Tropical Hygiene

Scholarships Fellowships, and Prizes—The following are awarded (*a*) Robert Gee Entrance Scholarship (Men) annually of £42 10*s* tenable for four years (*b*) Junior Lyon Jones Scholarship, of £10 per annum, tenable for two years, on results of First M.B Examination; (*c*) Senior Lyon Jones Scholarship of £10 per annum, tenable for two years, on results of Second M.B Examination (*d*) Derby Exhibition of £15 in Clinical Surgery; and (*e*) Clinical School Exhibition of £15 in Clinical Medicine; (*f*) University Scholarship of £50 for one year awarded on results of the Final (Part I) Examination for the degrees of M.B Ch.B (*g*) Holt Fellowships Physiology and Pathology, of £150 each for one year; (*h*) Gee Fellowship Anatomy of £100 for one year; (*i*) John Rankin Fellowships in Anatomy two each of the value of £120 tenable for two years; (*j*) Johnston Colonial Fellowship Biochemistry of £100 for one year (*k*) John W Garrett International Fellowship Bacteriology of £100 for one year, (*l*) Thelwall Thomas Fellowship, Surgical Pathology, of £150, for one year, (*m*) Ethel Boyce Fellowship in Gynæcology, of £100, for one year, (*n*) Mary Birrell Davies Memorial Fund Scholarship, of the value of £60, tenable for four years, offered for competition in alternate years, open only to women students who will have attained the age of 19 on the first day of October in the year of the award, (*o*) Rankin Exhibition in Practical Anatomy, of £23, for one year, (*p*) Lady Jones Research Fellowship in Orthopædic Surgery, £200, (*q*) Samuels Memorial Scholarships, three at £27, (*r*) Ridgway Research Scholarship (£94), (*s*) T J Hughes Research Scholarship (£72), numerous prizes and medals

Faculty Buildings —All the laboratories and classrooms are situated close together, communicating with one another, and constitute a block of buildings which forms one side of the University quadrangle There are the Johnston Laboratories for Biochemistry, the Medical School for Anatomy, Surgery, Toxicology, and Medicine, and the Thompson-Yates Laboratories for Physiology and Pathology There are separate buildings for Tropical Medicine and Public Health. Medical research has also been endowed with several new laboratories in which students can pursue research work after graduation

Clinical Studies —Clinical instruction is given at the four general hospitals—the LIVERPOOL ROYAL INFIRMARY, the DAVID LEWIS NORTHERN HOSPITAL, the LIVERPOOL ROYAL SOUTHERN HOSPITAL, the LIVERPOOL STANLEY HOSPITAL, at five special hospitals—the Eye, Ear, and Throat Infirmary, the Women's Hospital, Liverpool Maternity Hospital, the Royal Liverpool Children's Hospital, St Paul's Eye Hospital, and certain municipal hospitals The organisation of these hospitals to form one teaching institution provides the medical student and the medical practitioner with an extensive field for clinical education and study All the hospitals are within easy access of the University There are a large number of appointments to house physicianships and surgeonships at the general, special, and municipal hospitals which are open to qualified students

Public Health Department —This is located in a separate building, in which full courses of instruction are given to students for the Diplomas and Degrees of the University and of other Examining Boards

Prospectuses and further information may be had on application to the Dean of the Faculty of Medicine, University of Liverpool

UNIVERSITY OF MANCHESTER

Four degrees in Medicine and Surgery are conferred by the Victoria University of Manchester—viz, Bachelor of Medicine and Bachelor of Surgery (M.B and Ch.B), Doctor of Medicine (M D), and Master of Surgery (Ch.M) A Diploma in Psychological Medicine, a Diploma in Public Health, and a Diploma in Bacteriology are awarded by examination to registered medical practitioners

Degrees of Bachelor of Medicine and Bachelor of Surgery —Before admission to the degrees of M B and Ch B candidates are required to present certificates that they will have attained the age of 21 years on the day of graduation, and that they have pursued the courses of study required by the University Regulations during a period of not less than five and a half years after the date of their registration by the General Medical Council, two of such years having been passed in the University subsequently to the date of passing the first M B Examination

The First Examination (1) Chemistry and Physics, (2) (*a*) Botany, (*b*) Zoology Candidates must have attended in the university the prescribed courses both of lectures and of laboratory work in each of the above-named subjects The Examination is divided into two parts Part 1 Inorganic and Elementary Organic Chemistry and Physics, Part 2, (*a*) Botany, (*b*) Zoology The candidates sit for these parts separately The Second Examination (1) Anatomy and Histology, (2) Physiology, including Physiological Chemistry Both subjects must be passed simultaneously The Third Examination (1) Pharmacology and Materia Medica, (2) Pathology and Bacteriology The Final Examination (1) Medicine, Systematic and Clinical (including Mental Diseases and Diseases of Children), (2) Surgery, Systematic, Clinical, and Practical, (3) Obstetrics and Gynæcology (including Clinical and Practical), (4) Forensic Medicine, (5) Hygiene and Preventive Medicine The Final Examination is divided into two parts Part I, Forensic Medicine, Hygiene and Preventive Medicine, Part II, Medicine, Surgery, Obstetrics and Gynæcology (Systematic, Clinical, and Oral) The two parts of the Final Examination must each be passed as a whole Candidates for the Second Part must have completed the sixth year of medical study

Degree of Doctor of Medicine —Candidates are not eligible for the degree of Doctor of Medicine unless they have previously obtained the degrees of Bachelor of Medicine and Bachelor of Surgery of this University, and at least one year has elapsed since they passed the examination for those degrees Candidates may elect either (1) to present an original dissertation, or (2) to undergo an examination The dissertation must embody the results of personal observation, or original research, either in some department of medicine or of some science directly related to medicine The examination, which will be written and practical, is in the Principles and Practice of Medicine, in Pathology and in some other subject to be selected by the candidate

Degree of Master of Surgery —Candidates are not eligible for the degree of Master of Surgery unless they have previously obtained the degrees of Bachelor of Medicine and Bachelor of Surgery of this University, and at least one year has elapsed since they passed the examination for those degrees The degree is conferred in the following branches Surgery (Branch I), Gynæcology (Branch II), Ophthalmology (Branch III), Laryngology, Otology, and Rhinology (Branch IV)

Degrees of B Sc and M Sc —The ordinary degree of B Sc in the Schools of Anatomy and Physiology may be obtained by students in Medicine who in their third year of study for the degrees of M.B, Ch.B, complete the additional courses in these subjects prescribed for these degrees The degree of B Sc with honours in anatomy or physiology may be obtained by students in medicine who, after completing the third year of study for the degrees of M B, Ch.B, devote the following year to the study of the subject of the honours school Graduates in science may proceed to the degree of M.Sc by presentation of an approved thesis

Diplomas 1 The following are available for candidates holding a registrable qualification in medicine, surgery, and midwifery, examinations are in two parts in each diploma and are written, oral, and practical Candidates may present themselves for Parts I and II separately or at the same time provided that no candidate be admitted to Part II unless he has already passed in Part I No candidate's name will be published until he has satisfied the examiners in both parts of the examination

(*a*) *Diploma in Psychological Medicine* —Part-time course extending over three University terms, two of which must be spent at the University Six months' residence must be spent at a recognised Hospital for Mental Diseases

(*b*) *Diploma in Public Health* —The course extends over twelve calendar months at least Part I of the examination is held in June and October, and Part II in March and October Instruction for at least one of the parts must be taken out at the University

2 *In Veterinary State Medicine* —Length of course, three University terms Candidates must be members of the Royal College of Veterinary Surgeons

3 *In Bacteriology* —For candidates who have graduated either in science or medicine or obtained other approved qualification Length of course one academic year A satisfactory thesis on an approved subject must be presented

Scholarships Fellowships, and Prizes —The following are offered in connexion with medical study at the Victoria University —Scholarships: Dreschfeld Entrance (triennial) £20; John Russell Medical Entrance £45 Sam Gamble Entrance for Women; Graduate Entrance (fees up to 100 guineas) two Dauntesey Medical Junior £50 each; Dauntesey Medical Senior £50; Professor Tom Jones Exhibition in Anatomy £25, Dickenson Trust Scholarships in Anatomy and Pathology Platt Physiological, £90; Graduate Research Scholarship £70; Dickenson Trust Travelling Scholarships in Medicine and Surgery; Ashby Memorial in Diseases of Children (triennial) £100, Holt Post-Graduate Medical Scholarship for Women £60 Elected Research Studentships Fellowships: Leech Research £70; Professor Tom Jones Surgical £105; Morrison Watson in Anatomy £150; John Henry Agnew in Diseases of Children £120 Delépine in Preventive Medicine (biennial), £300; Pilkington Fellowship in Cancer Research, £300; Knight Fellowship in Psychological Medicine; Honorary Research Fellowships Prizes: Sidney Renshaw in Physiology—Junior £10 Senior £20 Wild Prize in Pharmacology, £10; Turner Medical, two prizes each of 10 guineas Dumville Surgical £15; John Henry Agnew in Diseases of Children, £30 There are many general entrance scholarships, in addition to those already mentioned open for competition, the examinations for which are held in the month of May Full particulars can be obtained from the Registrar

The Medical School.—This school, largely extended in 1920 is provided with dissecting rooms, X ray rooms physiological laboratories, private laboratories, and work rooms, besides lecture-rooms, museums, and general and departmental libraries. In the pathological laboratories (now removed to special buildings close to the Royal Infirmary) ample provision is made for the teaching of pathology and bacteriology and for the prosecution of original research The Helen Swindells Laboratory is specially equipped as part of a new department for investigation in cancer Ample facilities for investigation are provided in Anatomy, Physiology, and Materia Medica; new Pharmacological Laboratories were recently added. In the public health department, which is lodged in a separate institute in York place near the Royal Infirmary, suitable laboratory accommodation is provided for the study of sanitary chemistry physics, and practical bacteriology in the departments of chemistry and physics and in that of pathology

Clinical Studies —The clinical and practical departments of medical study are taught partly in the medical school of the University and partly in the Royal Infirmary and St. Mary's Hospitals for Women and Children a fever hospital mental hospitals, a convalescent home, and other special hospitals.

A residential Hostel for final year students has been opened in proximity to the University and the Royal Infirmary, where accommodation is available also for a few graduates

The Manchester Royal Infirmary near the University has accommodation for 640 beds (including 54 beds at the Central Branch) Associated with the Infirmary are (1) the Convalescent Hospital at Cheadle containing 180 beds; and (2) the Central Branch in the City which has accommodation for 54 patients. The Associated Hospitals thus contain 770 beds and are under the same management There is also a home of 100 beds for private patients

The medical side consists of four units, each having a testing room for the scientific investigation of morbid products and a class-room. The surgical beds are arranged in five units, each unit having its own operation theatre with anæsthetising recovery sterilising testing and apparatus rooms, and its own class-room attached One of the surgical units is assigned to orthopædic and neurosurgical cases A department of plastic surgery has been established The gynæcological, aural and out-patient departments each have their own operating theatre Bacteriological investigations are carried out in a special clinical laboratory A department for the study of heart disease, with an electric cardiograph and other instruments for research diagnosis, and teaching purposes is attached to the medical wards There is also a laboratory for clinical research. The X ray department has nine separate X ray outfits for different purposes, and one large room is put aside specially for X ray demonstrations and teaching purposes. A large massage school is also connected with this department. Women students are admitted on the same terms as men. Two Entrance Scholarships in Medicine of the value of £160 each are offered annually by the Council of the Manchester University and the Medical Board of the Manchester Royal Infirmary for proficiency in Arts and Science subjects respectively All the usual appointments may be held by those who have attended the practice of the Infirmary

The Royal Manchester Children's Hospital at Pendlebury contains 230 beds (including 40 in the Zachary Merton Convalescent Home) and 80 in the Convalescent Home Lytham St Anne's. Clinical instruction is given by the medical staff at the Hospital and Dispensary Gartside-street, Manchester There is a massage and electrotherapeutic department also an artificial sunlight department Clinical assistants are appointed for periods of six months There is an orthopædic department out patients for which are seen at Gartside-street, and a ward at Pendlebury is devoted to those cases needing operative treatment. The hospital is recognised by the Royal College of Physicians for the diploma in children's diseases

Ancoats Hospital Manchester, is a general hospital of 151 beds and a Convalescent branch which is situated at Great Warford Alderley Edge Cheshire and has 35 beds

The medical side consists of three units under the care of three honorary physicians with three out-patient clinics of consultative nature A cardiographic department is under the care of one of the physicians Much work is done in gastro-enterology neurology, and diseases of the blood. The surgical units are four in number, each under the care of an honorary surgeon; the orthopædic department, which deals with all fractures and bone injuries is very large One surgical unit is devoted to abdominal surgery, and one is devoted to oto-rhino-laryngology while a urological department is under the care of one of the honorary surgeons All these units have a largely attended out patient department Clinical teaching is given both to under-graduate and post-graduate Students in all the out-patient clinics which are free to them and in the wards while post-graduate lectures are given in the autumn and spring Clinical assistantships are available for post-graduates

There are seven resident appointments which are open to men and women graduates and twelve part-time registrar appointments (medical surgical orthopædic and laryngological) which are renewable annually

UNIVERSITY OF LEEDS

Four degrees in Medicine and Surgery are conferred—viz.: Bachelor of Medicine and Bachelor of Surgery (M.B and Ch.B) Doctor of Medicine (M D), Master of Surgery (Ch.M.) also Degrees and Diplomas in Dental Surgery and Diplomas in Public Health and in Psychological Medicine. Courses and Degrees in the Faculty are open to men and women alike.

Degrees of Bachelor of Medicine and Bachelor of Surgery —Candidates for these degrees are required to present certificates showing that they will have attained the age of 21 years on the day of graduation, and have attended courses approved by the University extending over not less than five years, two of such years at least having been passed in the University, one of which must be subsequent to the date of passing the First Examination. Candidates must also satisfy the examiners in the several subjects of the following examinations, entitled respectively the Matriculation Examination, or such other examination as may have been recognised by the Joint Matriculation Board in its stead, the First Examination, the Second Examination, and the Final Examination The First Examination consists of Part I, Physics and Inorganic Chemistry, Part II, Organic and Physical Chemistry, Part III, Botany, Part IV, Zoology Candidates will be allowed to pass the parts separately The Second Examination consists of Part I, Materia Medica and Practical Pharmacy, Part II, Anatomy and Physiology Candidates will be allowed to pass either part separately The Final Examination consists of Part I, Pharmacology, Pathology, and Bacteriology, Part II, Medicine, Surgery, Obstetrics and Gynæcology, Part III, Forensic Medicine, Public Health, and Therapeutics Part I may be taken at the end of the second clinical year, and Parts II and III may be taken at the end of the third clinical year, but not before the completion of the fifth year of medical study If taken separately Part III may not be passed before Part II

Degree of Doctor of Medicine and Master of Surgery Candidates are not eligible for the degree of Doctor of Medicine or Master of Surgery unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery of the University (or of Victoria prior to December, 1904) and at least two years' Hospital Practice or four years' other professional practice for the former and one year has elapsed for the latter since they passed the examination for those degrees Candidates for the degree of Doctor of Medicine may present a dissertation and, if the dissertation is considered to be of exceptional merit, will not be required to pass an examination The first term commences on Oct. 1st Prospectus can be obtained from the Academic Sub-Dean.

Post-graduate work —Practitioners wishing to attend Infirmary practice during short periods, or post-graduate classes held by members of the clinical staff, may do so on application to the Clinical Sub-Dean, from whom particulars may be obtained.

The Scholarships and Prizes, in order of importance, are (1) medical scholarship, value £130, (2) Infirmary scholarship, value £75, (3) the Littlewood prize, value about £50, (4) West Riding Panel Practitioners' prize, value £25, (5) Hillman prize, value £30, and (6) the William Hey gold medal The last is generally awarded to a young graduate who figures in the other prizes and sentimentally may be considered of first importance

Clinical Studies —The clinical studies are pursued mainly at the LEEDS GENERAL INFIRMARY AND WOMEN'S HOSPITAL, which has accommodation for 694 in-patients, including 88 beds at branch hospitals in the country Clinical teaching takes place daily in the wards, in medicine and surgery There are medical, surgical, ophthalmic, aural, electrotherapeutic, and radiographic departments, in each of which special instruction is imparted to students Gynæcological and children's departments, together with laryngeal, venereal, and skin clinics, are in operation, and there is a special ward for cases of nutritional disorders of children.

In addition to work in the General Infirmary, clinical instruction in obstetrics is given in the Leeds Maternity Hospital and in mental and infectious diseases in the Wakefield (W.R) Mental Hospital and Leeds City Fever Hospital respectively

The General Infirmary —This hospital has accommodation for 673 beds, of which 450 are allotted to general medical and surgical cases, adults and children, the remainder being given up to ophthalmic, aural, orthopædic, radium, and dermatological cases In that total is included the patients in the semi convalescent branch hospitals, the Ida and Robert Arthington, containing 100 beds The University and hospital paid appointments in connexion with the Infirmary and other bodies are numerous Associated also with the Infirmary is the Women's Hospital of 84 beds for the treatment of gynæcological and obstetric diseases, students when eligible attend the practice of this hospital, to which there are three paid resident appointments Recognised students may attend the clinical teaching in the out-patients' department of the Leeds Public Dispensary and Hospital During the autumn and spring terms, regular post-graduate lectures and demonstrations are held on Tuesdays at the General Infirmary, and on Wednesdays at the Public Dispensary and Hospital, which are open to all general practitioners resident in the district

Leeds Maternity Hospital contains 140 beds for cases of labour, while there is other accommodation attached for the treatment of morbid pregnancies There is an X ray department, and large extern districts are centred upon the institution. The hospital is affiliated to the University for purposes of clinical training, and every student takes an obstetric clerkship and attends in the intern and extern departments During the second and third months personal contact with not less than 20 cases of labour is required, the students being resident in the neighbouring hostel

West Riding Mental Hospital —The well known hospital at Wakefield accommodates 2600 patients, a separate building, containing 360 beds, being provided for the treatment of acute insanity, while mentally deficient children are accommodated in separate homes in juxtaposition Clinical clerkships in the wards and laboratories can be filled by qualified practitioners or, on application to the medical superintendent, by senior students This hospital is a recognised institution for the purpose of training for the diploma in psychological medicine Courses of lectures in mental diseases and laboratory work can be taken at the hospital, forming part of the University of Leeds course for the diploma

UNIVERSITY OF SHEFFIELD

The Degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M.B, Ch.B), Doctor of Medicine (M D), and Master of Surgery (Ch M), Bachelor of Dental Surgery (B D S), and Master of Dental Surgery (M D S) There is also a Diploma of Licentiate in Dental Surgery The courses and degrees in the Faculty of Medicine are open to men and women alike Candidates must matriculate in the University or pass such other examination as may be recognised for this purpose by the University and sanctioned by the Joint Matriculation Board

Degrees of Bachelor of Medicine and Bachelor of Surgery —A candidate must have attained the age of 22 years on the day of graduation, and have pursued the courses of study required by the University regulations during a period of not less than five and a half years subsequently to the date of his matriculation, three of such years at least having been passed in the Faculty of Medicine of the University one at least being subsequent to the passing of the Second Examination The subjects of the First Examination are Chemistry, Physics, and Biology Candidates must, in addition to matriculation, pass a preliminary examination in Physics and Chemistry before taking the First Examination Students who before entry have attained a standard in Chemistry and Physics approved by the Faculty of Medicine have the opportunity of working for the degree of B Sc (with honours) in Physiology concurrently with their work for the degrees of M.B, Ch.B The Second Examination Candidates must have attended courses of instruction in Physiology (first part) for one year, and in Anatomy for five terms The Third Examination Candidates must have attended courses of instruction in Pathology for five terms in Pharmacology for four terms (and one term in *Pharmacy*), in Applied Anatomy for four terms and in Physiology (second part) for six terms. The Final Examination The subjects are Part I, Forensic Medicine and Public Health. Candidates must have attended courses for one term in each subject; Part II. Medicine (including Mental Diseases Diseases of Children, Vaccination, and Special Pathology—with Morbid Anatomy and Clinical Pathology) and Therapeutics; Part III Surgery (including the administration of Anæsthetics Diseases of the Ear Nose and Throat Ophthalmology and Surgical Pathology) and Obstetrics and Gynæcology, including Antenatal and Postnatal practice and Infant Hygiene. Candidates for Parts II and III must have completed a minimum of five and a half years of approved study

Degree of Doctor of Medicine—Candidates for the degree of Doctor of Medicine must have passed the examination for the degrees of M.B Ch.B at least three years previously must present a thesis embodying observations in some subject approved by the professor of medicine and must pass an examination in the Principles and Practice of Medicine

Degree of Master of Surgery—Candidates must have taken the M.B Ch.B at least three years previously, and must since have held for not less than twelve months a surgical appointment in a public hospital

The subjects of examination are Systematic Clinical, and Operative Surgery, Surgical Anatomy Surgical Pathology and Bacteriology

Scholarships and Prizes—The following scholarships are offered: Four Town Trustees scholarships offered annually each of the value of £60 per annum for three years. Medical offered annually covers cost of tuition for a degree course in the Faculty of Medicine Six Edgar Allen offered annually each of the value of £100 *per annum for three years. Post-graduate:* Frederick Clifford scholarship value £50 per annum tenable for two years. Mechanics Institute scholarship value £50 for one year with free admission to those University courses taken by the holder in connexion with his work, renewable for a second year Town Trustees fellowship value £75 for one year Medals and Prizes Kaye scholarship Thomas Woodcock Prize Gold Medal in Clinical Medicine and Surgery; John Hall Gold Medal in Pathology, Holroyd Gold Medal in Anæsthetics the Walter S Kay Gold Medal in Mental Diseases bronze medals. Particulars of all the above may be obtained from the *Registrar*

The Medical School—The Medical Department occupies the entire north wing of the University quadrangle. The various athletic and other students societies are under the management of the Union Representative Council elected annually There are large and comfortable common rooms both for men and women students and a new and well equipped Students Union for men and women A refectory is open daily at the University and at the Union where students may obtain meals and refreshments at moderate prices The University journal *The Arrows* and a Medical School journal the *North Wing* edited by a committee of staff and students, are published each term. There is good hostel accommodation for men and women students.

Clinical Studies—The University is within easy reach of the various hospitals with which it is connected for clinical purposes, and as will be seen the aggregate number of beds is very large.

The SHEFFIELD ROYAL INFIRMARY (500 beds) and the SHEFFIELD ROYAL HOSPITAL (340 beds) provide all the opportunities associated with a large general hospital with the usual out-patient and in patient departments for diseases of ear throat, and nose eye skin, and venereal diseases; there are also orthopædic and psychiatry clinics. The two institutions are amalgamated for the purposes of clinical practice, medical, surgical and special, and house appointments are available The JESSOP HOSPITAL FOR DISEASES OF WOMEN, with 143 beds, has also a maternity department, with about 110 in patients per annum and about 8000 out-patient cases attended; in addition there are facilities for obstetrical work at the Municipal Hospital The Children s Hospital has 118 beds Special courses on acute Infectious Diseases are held at the City Fever Hospital (740 beds) and on Tuberculosis at the Municipal Sanatoria and Clinics (510 beds) The South Yorkshire Mental Hospital (2000 beds) is available for teaching in Mental Diseases. Every facility is afforded in the various laboratories for the prosecution of advanced study and research

Post-graduate courses of clinical instruction are held annually in the various hospitals connected with the school

UNIVERSITY OF BRISTOL

In the Faculty of Medicine there are the following degrees Bachelor of Medicine and Bachelor of Surgery (M.B and Ch.B) Doctor of Medicine (M.D) Master of Surgery (Ch.M) Bachelor of Dental Surgery (B.D.S) and Master of Dental Surgery (M.D.S) There are also the following diplomas: Diploma in Public Health (D.P H.)* Diploma in Dental Surgery (L.D.S) and Diploma in Veterinary State Medicine *

All candidates for degrees in Medicine Surgery and Dentistry are required to pass, at Matriculation standard an examination called the School Certificate Examination or to pass such examination as may be regarded as equivalent by the Senate All courses degrees, and diplomas are open to men and women

Degrees of Bachelor of Medicine and Bachelor of Surgery—Candidates shall be not less than 21 years of age and shall have pursued the courses prescribed by University Regulations during not less than five years after passing the first examina*tion in Chemistry Physics and Biology*, and entering on the professional curriculum at the University or an institution recognised as equivalent of which three shall have been passed in the University and two of these three subsequent to passing the second examination. All candidates for the degrees of M.B Ch.B are required to satisfy the examiners in the several subjects of three examinations The First Examination: The subjects of examination are Chemistry (Inorganic Physical and Organic) Physics, and Biology This part of the curriculum shall extend over one year (Candidates who have passed the Higher School Certificate approved by the Board of Education in these subjects will not be required to sit for the first examination and will be regarded as having completed one year of study A candidate who passes the pre-registration examination before entering the University shall produce evidence of further study to a standard beyond that of the First School Certificate examination in at least one of a list of specified subjects of general education.) The Second Examination The subjects of examination are Anatomy and Physiology including Elementary Pharmacology and Elementary Pathology The Final Examination: The subjects of examination are: Materia Medica and Pharmacy Pharmacology Pharmacotherapeutics and Toxicology Pathology and Bacteriology (Section I) Forensic Medicine, Public Health, Obstetrics (including Diseases of Women) Surgery (Systematic Clinical Practical and Operative including Ophthalmology and Oto-rhino-laryngology) Medicine (Systematic Clinical and Practical including Mental Diseases) (Section II) The subjects included in Section II may be taken in two groups—viz. Group I., Surgery and Obstetrics; Group II Medicine Public Health and Forensic Medicine. Candidates may pass Sections I and II together or separately and the two groups of Section II. may be taken together or separately but no

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At present in abeyance.

student can obtain honours who elects to take the two groups of Section II separately.

Degree of Doctor of Medicine—Candidates shall be Bachelors of the University of not less than two years' standing as such and may elect either (1) to pass an examination in General Medicine, or (2) to pass an examination in State Medicine, or (3) to present a Dissertation The candidate who elects to pass the examination in State Medicine must hold a Diploma in Public Health of some University or College, and the candidate who elects to present a Dissertation may be examined in the subject thereof

Degree of Master of Surgery—The degree may be taken in General Surgery or in Special Subjects Candidates shall be Bachelors of the University who have practised for two years in an approved hospital (including the holding of an approved appointment for six months) and one of the two years shall have been spent in a hospital with a medical school attached They shall present a Dissertation and pass an examination For General Surgery, the examination shall include a written examination in Surgery, a written examination in Surgical Anatomy and Surgical Pathology, a Clinical examination, an oral examination and an examination in Operative Surgery For special subjects—that is, Ophthalmology or Oto-rhino-laryngology or Gynæcology—the examination shall include a written examination in the Anatomy, Physiology, and Pathology of the region of the body concerned (including in the case of Ophthalmology, Physiological Optics) and a written examination in General Surgery together with a written, oral, and clinical examination in the particular branch of Surgery concerned, as well as an examination in Operative Surgery of the region concerned

Scholarships and Prizes—The following are awarded The Ashworth Hallett Scholarship, value £40, open to women only, two Martyn Memorial Pathological Scholarships of £10 each, the Tibbits Memorial Prize, value 7 guineas, for proficiency in practical surgery, the Committee's Gold and Silver Medals for fifth or sixth year students for general proficiency, the Augustin Prichard Prize, value about 6 guineas, for proficiency in anatomy, the Henry Clark Prize, value 11 guineas, for proficiency in obstetrics and gynæcology, the Crosby Leonard Prize, value 6 guineas, for proficiency in surgery, the Suple Surgical Prize, a gold medal and 7 guineas, the Suple Medical Prize, a gold medal and 7 guineas, the Henry Marshall Prize, value £12 for dressers, the H M Clarke Scholarship, value £15, for proficiency in surgery, The Royal Infirmary Faculty Prize, value £20, for general proficiency, the Sanders Scholarship, value £22 10s, for general proficiency, the Barrett-Roué Scholarship for proficiency in diseases of the eye, ear, nose, and throat, value £24, open to men only, Lady Haberfield Scholarship, value about 25 guineas, the Paul Bush Gold Medal in alternate years to best Resident Medical Officer at Royal Infirmary, Markham Skerritt Memorial Prize, awarded every three years to that member of University, not a member of Medical Board, who, in opinion of that Board, has published the best original work during the three years

Bristol City Senior Scholarships and those offered by the Counties of Gloucestershire, Somerset, Wilts, and Dorset and the City of Bath are tenable in the University There are also a Miriam Badock Scholarship of the value of £120, H H Wills Science Scholarships, open to boys proceeding from Clifton College, and the Harold Greenwood Memorial Scholarship, of the value of £20, open to boys who have received instruction at State-provided schools in Clevedon (or elsewhere in Somerset) and subsequently at secondary schools in Somerset or Bristol A Dulverton Entrance Scholarship of £100 a year for 3 years will be open for competition in 1938 by candidates for the Faculty of Medicine The Beaverbrook Fellowship and some of the Fellowships awarded by the Colston Research Society for research in the University are allotted to the Faculty of Medicine University Graduate Scholarships are open to graduates of not more than one year's standing The Michael Hiatt Baker Scholarship of the value of £200 is open to graduates from New Zealand for research in the University

Clinical Studies—The allied but not yet amalgamated hospitals (ROYAL INFIRMARY and GENERAL HOSPITAL) have about 700 beds and extensive outpatient departments, special clinics for Diseases of Women and Children, including antenatal and postnatal work, also for eye, ear, nose, and throat, and skin diseases, heart diseases, rheumatism, asthma, and cancer Here are in addition large and well equipped departments for Dental work (shortly to be transferred to a new Dental School and Hospital), large outdoor Maternity Departments, and a National Radium Centre The venereal diseases clinic for Bristol is at the Royal Infirmary

At each of these institutions there are well arranged pathological museums, post-mortem rooms, and laboratories for morbid anatomy There are also laboratories for work in clinical pathology, bacteriology, and biochemistry, in which special instruction is given in these subjects Departments are provided and well equipped for radiology, radiotherapy, actinotherapy, electrotherapy, and massage, with all forms of physiotherapy

The students of the school also attend the practice of the Royal Hospital for Sick Children and Women, containing 120 beds, and that of the Bristol Eye Hospital with 70 beds, the Bristol Mental Hospital, Southmead Hospital, and Ham Green Fever Hospital Other institutions, including Stoke Park Colony for mental defectives and the Winford Orthopædic Hospital, are also available for their special purposes

There are numerous salaried junior appointments for residents who are graduates

Post-graduate Study—Qualified medical practitioners may be appointed as clinical assistants for a period of one or more months They may act as assistants, if times permit, in more than one department and in any of the hospitals during their period of study They will be entitled to the use of the clinical laboratories and medical library, and have the right to attend in all departments, including operations, post-graduate and ordinary clinical demonstrations, and post-mortem examinations Demonstration courses are held at various times when applied for by groups of practitioners

All inquiries and applications for admission should be addressed to the Director of Post-graduate Studies (Clinical Section), Department of Medicine, University of Bristol, who can be seen on any day by appointment

Further information as to scholarships, curricula, and fees can be obtained from the Dean of the Faculty of Medicine or the Registrar of the University

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UNIVERSITY OF WALES

THE WELSH NATIONAL SCHOOL OF MEDICINE

The University grants degrees in Medicine and Surgery—Bachelor in Medicine and Bachelor in Surgery (M.B, B Ch), Doctor in Medicine (M D), and Master in Surgery (M Ch.)—and Diplomas in Public Health (D P H) and Tuberculous Diseases (T D D)

Degrees of Bachelor in Medicine and Bachelor in Surgery—Candidates are required to pursue a course of study of not less than six academic years subsequent to their matriculation in the University They must hold an arts or science degree of the University of Wales, or of some other University approved for the purpose, but certain of the courses pursued for a B Sc or a B A degree may be counted as required for the Medical degrees

The courses for the M.B, B Ch are divided into two sections The first includes Physics, Chemistry, Botany, and Zoology (preliminary subjects), Organic Chemistry (subsidiary subject), Human Anatomy, and Physiology (ancillary subjects) Study of the preliminary subjects and of Organic Chemistry must extend over at least one academic year study of Physiology and Human Anatomy must extend over at least two academic years the first section of the course must occupy not less than three years The second section includes courses in Materia Medica and Pharmacology Pathology and Bacteriology, Hygiene and Forensic Medicine Medicine Surgery and Obstetrics and Gynæcology These courses cannot be commenced until the examinations of the first section have been completed Examinations in all the subjects of the second section are held twice each year

Degree of Doctor of Medicine —Every candidate for the degree of *Doctor in Medicina* shall satisfy the examiners in an examination in Clinical Medicine and shall submit a thesis to the judgment of the University A candidate may present himself for the examination in clinical medicine during or subsequently to the second year after qualification for the degrees of Baccalaureus in Medicina and Baccalaureus in Chirurgia and may submit his thesis during or subsequently to the third year after qualification for those degrees The thesis shall embody the results of the candidate s personal observation or original research in some branch of medical knowledge or of some science directly relative to medicine, excepting a subject that is exclusively surgical The candidate shall indicate in what respects his thesis appears to him to advance medical knowledge or practice. A candidate shall be required to submit himself to an oral or other examination on the subject matter of the thesis ; provided always that in exceptional circumstances it shall be within the discretion of the University to exempt a candidate from such an examination

Degree of Master of Surgery —Every candidate for the degree of *Magister in Chirurgia* shall satisfy the examiners in an examination in Surgery and shall submit a thesis to the judgment of the University A candidate may present himself for the examination in Surgery during or subsequently to the second year after qualification for the degrees of Baccalaureus in Medicina and Baccalaureus in Chirurgia, and may submit his thesis during or subsequently to the third year after qualification for those degrees The examination in Surgery shall consist of two parts Part I —(i) Surgical Anatomy (ii) Bacteriology and Surgical Pathology Part II.—(i) Surgery (ii) Clinical Surgery (iii) Operative Surgery No candidate shall be deemed to have passed in Part II unless he has satisfied the examiners in Part I of the examination. The thesis shall embody the results of the candidate s personal observation or original research in some branch of surgical knowledge or of some science directly relative to surgery The candidate shall indicate in what respects his thesis appears to him to advance surgical knowledge or practice. A candidate shall be required to submit himself to an oral or other examination on the subject matter of his thesis provided always that in exceptional circumstances it shall be within the discretion of the University to exempt a candidate from such examination

Post-graduate Study —Certain courses of Post-graduate study are given during the year and facilities may be offered to graduates in medicine and other duly qualified persons to carry out research work in the different departments of the Medical School Research scholarships are available ranging in value from £150 to £250 per annum Further information regarding these is given later under the heading Research Scholarships

Clinical Institutions —Clinical teaching is carried out in the Cardiff Royal Infirmary (489 beds); the Llandough Hospital (City of Cardiff) (345 beds); the City Lodge Hospital (City of Cardiff) (604 beds) the Cardiff City Mental Hospital (700 beds); the Cardiff City Isolation Hospital (290 beds); the Prince of Wales Hospital (Orthopædic) (132 beds) the Cefn Mably Glan Ely and Sully Hospitals (Tuberculosis) (608 beds) the Lord Pontypridd Hospital (Acute Rheumatism—Children) (25 beds) These Institutions are modern and well equipped and provide facilities for both In patient and Out-patient Clinical Instruction The Cardiff Royal Infirmary is the main teaching hospital It serves a district having a population of more than half a million and during the year 1936 6208 patients were admitted to the wards and 39 875 patients treated in the Out-patient Departments

Scholarships Free Studentships Prizes and Medals Entrance Scholarships, County Free Studentships and Scholarships are available Particulars of these are contained in a special Prospectus, which can be obtained on application An Isaac Roberts Scholarship in Science of the value of £50 per annum tenable for three years, is awarded triennially on the results of the Entrance Scholarship Examination of the Cardiff College The Samuel Brothers Scholarship value £12 to £15 is awarded annually on the results of the work of the first year of the Medical Course at Cardiff College The Dr Price Prize value £50, is awarded annually on the results of the work of the first year of the Medical Course at the Cardiff College The Dr Howell Rees Scholarship value £17 10*s* is awarded triennially and is held in The Welsh National School of Medicine it is awarded on the result of the examinations in Anatomy and Physiology Numerous other prizes are awarded for proficiency in different subjects

Research Scholarships — A Catherine Buckton Scholarship of £60 for one year is offered periodically by the Council of Aberdare Hall (one of the Halls of Residence for Women Students) to a woman who shall undertake to do Post-graduate work. The Mrs John Nixon Research Scholarship of £150 per annum is available for the promotion of research in Medicine and Medical Pathology The Lord Merthyr Research Scholarship value £200 per annum is available for the promotion of research in Cancer A Cecil Prosser Research Scholarship value £250 per annum, is available for the promotion of research in Tuberculosis. The Ewen Maclean Research Scholarship value £150 per annum is available for the promotion of research into the factors which constitute and the conditions which vary resistance to disease, especially as regards midwifery

Regulations regarding the diplomas in Public Health and Tuberculosis are detailed elsewhere.

All inquiries should be addressed to the Secretary Welsh National School of Medicine The Parade Cardiff.

ENGLISH MEDICAL CORPORATIONS GRANTING DIPLOMAS

CONJOINT EXAMINING BOARD

All the schools described under the heading of the Universities to which they are attached are recognised as suitable places of instruction by the corporations granting medical diplomas On p 502 will be found the Metropolitan Hospitals, where general and special studies can be pursued On p 508 the centres outside London affording educational facilities are described. The courses of study at the principal colonial medical schools are also recognised as qualifying for the examinations of these corporations

Students of the Royal Colleges pass a Preliminary Examination in General Education recognised by the Board and a *Pre-Medical Examination* in Chemistry Physics and Elementary Biology conducted by the Conjoint Examining Board before commencing the five years curriculum of professional study or some other examination recognised by the Board—namely the examination in Chemistry Physics, and Biology for the degree in Medicine of any University recognised by the Board ; the Higher School Certificates of Oxford and Cambridge Universities and the Oxford and Cambridge Schools Examination Board, the Higher Certificates of London, Bristol, Durham Universities, the Joint Matriculation Board of the Northern Universities, and the Central Welsh Board Higher Certificate. A candidate must enter for Chemistry and Physics together, and he will not be allowed to pass in one without obtaining at the same time at least half the number of marks required to pass in the other subject. No study of anatomy and physiology is recognised before this examination is passed. Not more than two terms of professional study (Anatomy and Physiology) will be recognised before Elementary Biology is passed. He will be admitted to the examination on producing evidence of having passed the required preliminary Examination in General Education. The examination is partly written, partly oral, and partly practical. A candidate rejected in one or both subjects of the examination will not be admitted to re-examination until after the lapse of a period of not less than three months.

There are two Professional examinations called the *First* and *Final Examinations*. The subjects of the First Professional Examination are: Section I: (a) Anatomy, including Histology and Embryology; (b) Physiology, including Biochemistry. Section II: Pharmacology and Materia Medica. A candidate must have attended at a recognised Medical School courses of instruction in Anatomy, including Embryology, during five terms during which he must have dissected the whole body, courses of instruction in Physiology, including Biochemistry during five terms, courses of instruction in Pharmacology and Materia Medica. A candidate may present himself for the two Sections together or separately, but he must take parts (a) and (b) of Section I together until he has passed in one or both parts, but a candidate will not be allowed to pass in one part unless he obtains at the same time at least half the number of marks required to pass in the other part.

Section II of the examination may be passed at any time before the candidate enters for the Final Professional Examination, provided that the courses for Section I have been completed. A candidate who produces satisfactory evidence of having passed an examination in the subjects of Section I or of either part of Section I and of Section II in the examination for the degree in Medicine conducted at a University recognised by the Board will be exempted from further examination in such subjects.

Final Professional Examination.—The subjects of the Final Professional Examination are: Section I: Pathology (including Morbid Anatomy, Morbid Histology, and Clinical Pathology) and Bacteriology. Section II: Part I: Medicine, including Medical Anatomy, Forensic Medicine, and Public Health. Part II: Surgery, including Surgical Anatomy and the use of Surgical Appliances. Part III: Midwifery and Gynæcology. The examination is partly written, partly practical, partly clinical, and partly oral. A candidate may take Sections I and II and the three parts of Section II of the Final Examination separately or may take the whole examination together. He will be required to produce the certificates required by the regulations before being admitted to the respective parts of the examination. Members of recognised universities outside the British Possessions are admissible to the examinations of the diplomas of L.R.C.P. and M.R.C.S. under special conditions. Graduates in medicine and surgery are required to pass the first examination and to complete 36 months' hospital practice before admission to any part of the final examination. Undergraduates are required to complete the full curriculum, after passing the Pre-Medical Examination. For further information see the current regulations of the Conjoint Examination Board in England.

Members of certain recognised Indian, Colonial, and Foreign universities who have passed examinations for the Degree of Doctor or Bachelor of Medicine or Surgery in the subjects of the First Examination may present themselves for the Final Examination under special conditions. The Royal Colleges also grant Diplomas (see p. 545) in Public Health, in Psychological Medicine, in Ophthalmic Medicine and Surgery, in Tropical Medicine and Hygiene, in Laryngology and Otology, in Medical Radiology, in Anæsthetics, and in Child Health. For all these diplomas candidates must hold a medical qualification registrable in the United Kingdom or be Graduates in Medicine of a recognised Indian, Colonial, or Foreign University.

Particulars may be obtained from the Secretary of the Examining Board, Examination Hall, Queen-square, London, W.C.1.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

THE MEMBERSHIP AND FELLOWSHIP

The College confers two separate diplomas—the *Fellowship*, a purely honorary distinction, and the *Membership*, obtained by examination.

Membership.—The age for admission to this diploma, it will be noticed, has been changed from 25 to 23 years. The alteration in the by-law of the College is designed to enable men who have just finished house appointments to sit for an examination for which their recent clinical experience has exactly fitted them. The candidate must either have obtained the licence of the College, or a degree of Doctor or Bachelor of Medicine at a University which is registrable by the General Medical Council and is recognised by the Censors Board. The examination is directed partly to pathology and partly to the practice of medicine. Credit is also given to candidates who show a knowledge of French or German, and there is a definite small allotment of marks for these optional subjects in the total qualifying marks. Further information may be obtained from the Registrar at the College.

Fellowship.—Fellows are selected annually from the ranks of members by the Council of the College.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

THE FELLOWSHIP

The Royal College of Surgeons of England confers its diploma of Fellow upon a few distinguished persons in an honorary capacity. Two Members of long standing may also be elected to the Fellowship annually. The bulk of the Fellows, however, obtain the diploma as the result of examination.

Fellowship.—The examination for the Fellowship is divided into two parts—viz., the Primary Examination and the Final Examination. The subjects of the Primary Examination are Anatomy and Physiology and those of the Final Examination are Surgery, including Surgical Anatomy and Pathology. The examinations are partly written and partly viva voce, and include the examination of patients and the performance of operations on the dead body. The Primary Examination is held in June and December and the Final Examination in May and November.

Conditions of Admission to the Primary Examination.—A member of the College is admissible to the Primary Examination at any time after receiving his Diploma of Membership. A candidate who is not a member is admissible after passing the First Professional Examinations of the English Conjoint Board in Anatomy and Physiology, or the equivalent examination in a recognised University, on the production of certificates of attendance upon prescribed courses.

Conditions of Admission to the Final Examination

(A) *For members of the College or Graduates in Medicine who passed the Primary Examination before Jan. 1st, 1935.*—(1) A member of the College is admissible to the Final Examination at any time after having passed the Primary Examination on producing satisfactory evidence of having been engaged for not less than six years in the study (or study and practice) of the profession. (2) A candidate who is not a member of the College, but who possesses a qualification recognised by the Council for the purpose, is admissible to the Final Examination after having passed the Primary Examination, on the production of evidence of having been engaged in the study (or study and practice) of the profession for not less than four years subsequent to the date of obtaining the recognised qualification, one year of which shall have been spent in attendance upon the surgical practice of a recognised Hospital or Infirmary

(B) *For all other candidates* —A candidate who has passed the Primary Examination and who is *either* (*a*) a member of the College who can produce satisfactory evidence of having been engaged in the study (or study and practice) of the profession for not less than six years, *or* (*b*) a Graduate of four years standing in Medicine and Surgery in a University recognised by the Council for the purpose is admissible to the Final Examination on producing evidence that he has held for not less than six consecutive months the post of Resident House Surgeon, or other responsible post in charge of general surgical patients in the wards of a general hospital recognised by the Council for the purpose

Note.—In compliance with a condition of the Charter the Diploma of Fellow is not conferred upon successful Candidates until they have attained the age of twenty five years.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS

One of the principal objects of the College is to encourage the study and practice of obstetrics and gynæcology subjects which should be inseparably interwoven The College consists of Fellows and Members

Candidates for the membership must have been entered on the British Medical Register for at least three years or be eligible for entry thereon Before being accepted for the examination they must produce evidence satisfactory to the Examination Committee, of having held resident hospital appointments in general medicine or surgery and in obstetrics and gynæcology for the period laid down in the regulations (at present six months each)

Candidates who are accepted for examination must present records of 25 obstetrical and 10 gynæcological selected and personally attended cases and be prepared to discuss these in the examination they must also present two commentaries on individual cases or groups of cases

The examination consists of two written papers a clinical examination and a viva voce on pathology and case records

The fellowship of the College is granted to those members who are judged to have advanced the science and art of obstetrics and gynæcology

The fellowship and membership of the College include practically every teacher of obstetrics and gynæcology in Great Britain and the British Dominions Fellowship or membership is now a necessary qualification for election to the staff of many obstetric and gynæcological hospitals and it is anticipated that in time it will be essential for election to the staff of all such hospitals; consequently all intending to specialise in obstetrics and gynæcology should endeavour to obtain the membership as soon as possible

For those practitioners who have had special post-graduate experience in obstetrics, but whose experience and work do not allow of their admission to the membership the College grants a diploma (D O O G) Candidates for it must be entered on the British Medical Register They must produce evidence of resident post-graduate experience in obstetrics as well as in general medicine or surgery Evidence of having regularly attended at antenatal, postnatal and infant welfare clinics and of a satisfactory course in gynæcology are also required

The D O O G is intended to indicate that the holder is a competent obstetrician and one who may be regarded as sufficiently capable to act in the capacity of consultant to local authorities in midwifery practice The examination does not, however, include gynæcology except in so far as it is directly associated with childbearing and this diploma is not meant for those who aspire to hospital appointments with charge of gynæcological beds

The regulations governing the membership and diploma may be obtained from the hon secretary, British College of Obstetricians and Gynæcologists, 58 Queen Anne street London W 1

SOCIETY OF APOTHECARIES OF LONDON

The Pre-Medical and Primary Examinations are held quarterly The Pre-Medical includes Chemistry, Physics, and Elementary Biology The Primary includes Anatomy Physiology and Histology, Materia Medica, and Pharmacy The latter examination cannot be passed before the completion of five terms Physiology and Practical Anatomy with Demonstrations, and the first two subjects cannot be taken separately except in the event of the candidate having previously passed in one and obtained at least half the marks required to pass in the other

The Final Examination for the Licence (L M.S.S.A Lond.) is held monthly except in September (A) Principles and Practice of Surgery including Surgical Pathology, Surgical Anatomy Operative Manipulation Instruments and Appliances. (B) Principles and Practice of Medicine, including Therapeutics, Pharmacology Medical and General Pathology Bacteriology and Morbid Histology (C) Midwifery, Gynæcology Diseases of New born Children, and the Use of Obstetric Instruments. (D) Forensic Medicine Hygiene, Mental Diseases, and the Theory and Practice of Vaccination. The examination is partly written partly practical partly clinical, and partly oral. Sections A, B + D and C may be taken at separate examinations, but there is no exemption from any part of the Final Examination

The minimum period of medical study extends over five years (57 months), and three academic years (33 months) must elapse after a candidate has passed the examination in Anatomy and Physiology before he can complete the *Final Examination* The course of study for the Final Examination includes attendance on the Surgical and Medical Practice with Post mortem Examinations, at a hospital connected with a medical school for a period of three winter and three summer sessions including a course of Practical Midwifery with attendance on 20 Midwifery cases. The offices of dresser and clinical clerk must have been filled at a hospital or institution recognised by the Society

The certificates prescribed by the Regulations must be produced before admission to the respective sections of the Final Examination.

Mastery of Midwifery —The examinations for this Diploma are held in May and November Candidates will be admitted to the examination who have been registered practitioners for at least three years and who have held a resident appointment in an institution recognised by the Society for six months or more and who for three months in each case have attended an antenatal clinic and an infant welfare centre, also recognised by the Society Medical officers employed by a public health authority and having special duties connected with Maternity and *Child Welfare*, will be admitted to the Examination on production of evidence to that effect. The examination will be conducted by written papers and by clinical and oral tests

Candidates for the examination must send in their certificates to the Registrar who will supply any other information.

[illegible] Robert [illegible] [illegible]

METROPOLITAN CENTRES AFFORDING EDUCATIONAL FACILITIES

Certain organisations and institutions provide for the needs of the medical student in his curriculum and for the post-graduate student requiring special forms of instruction and opportunities for clinical observation Many of the institutions are recognised by the English Conjoint Examining Board as a place of study for the fifth year of the curriculum

Special Diplomas in public health, tropical, psychological, and ophthalmic medicine, medical radiology and electrology, laryngology, otology, and tuberculosis are now granted in proof of intensive work along the different lines indicated Of these, the Diploma in Public Health, being regulated by the General Medical Council, is registrable Appointments to and promotion in the various Services are largely dependent on the possession of a particular diploma, and each syllabus of the special courses available at the institutions which follow, either with or without association with the Fellowship of Medicine, is planned to afford the necessary instruction

The courses arranged at the Bethlem Royal Hospital, the Maudsley Hospital, and the Tavistock Clinic for the Diploma in Psychological Medicine are referred to on the following page Similarly the Hospitals of the London County Council, Public Health Department (Special Hospitals Division), provide post-graduate as well as undergraduate facilities, while the hospitals of the Seamen's Hospital Society both supply the instruction necessary for the Diploma in Tropical Medicine and Hygiene, and coöperate in the activities of the Fellowship of Medicine and Post-Graduate Medical Association

All further information will be given by the secretaries of the various institutions

The Fellowship of Medicine and Post-Graduate Medical Association

Some 50 general and special London hospitals work in conjunction with this Association, which has its office at Room 28 in the House of the Royal Society of Medicine, 1, Wimpole street, London, W 1 Arrangements are made for courses in medicine and in surgery and the specialties, occupying the whole or part of each day for periods of one to four weeks Daily clinical teaching arranged Special evening clinical courses for the M R C P and F R C S (Primary and Final) Examinations are organised at intervals Courses, demonstrations, and lectures arranged by the Fellowship of Medicine are open only to members of the Fellowship The membership fee is £1 1*s* per annum, which includes the subscription to the monthly *Post-Graduate Medical Journal* The provisional list of Special Courses impending will shortly be available Full information regarding the courses of study and fees can be obtained from the Secretary

Infectious Hospitals of the London County Council

Classes of instruction in fevers for undergraduate medical students are given at the various hospitals, normally commencing in January, May, and October each year The minimum duration of the course is eight weeks, and sixteen attendances are necessary before a certificate can be granted to a student that he has satisfactorily completed his course The prescribed fee for a two months' course is £3 3*s* The medical superintendents arrange direct with the deans of the medical schools concerned as to the days and hours of the classes Students desiring to take this course should apply to their dean for information In addition, classes of instruction for the Diploma of Public Health, which comply with the rules of the General Medical Council for that Diploma, are given at two of these hospitals—viz , North Western Hospital and Brook Hospital The minimum duration of this course is three months, and twenty-four attendances are necessary before certificates can be granted The prescribed fee for a three months' course is £3 13*s* 6*d* Full particulars relating to these classes may be obtained on application to the Medical Officer of Health, London County Council, Public Health Department, Special Hospitals Division, County Hall, Westminster Bridge, S E 1

Seamen's Hospital Society

The society possesses six establishments the Dreadnought Hospital at Greenwich, 257 beds, the Albert Dock Hospital, E 16, 53 beds, the Hospital for Tropical Diseases, Endsleigh gardens, W C 1, 70 beds, Tilbury Hospital, Tilbury Docks, Essex, 94 beds, King George's Sanatorium for Sailors, Bramshott, Hants, 80 beds, and the Angas Home, Cudham, 36 beds The first and second house surgeons at the Dreadnought Hospital are recognised by the Council of the Royal College of Surgeons of England for the purpose of Regulations 21 and 23 relating to the examinations for the Diploma of Fellow The London School of Clinical Medicine is attached to the Dreadnought Hospital Residential facilities for the observation of the practice of the wards, special departments and pathological laboratory of the Dreadnought Hospital are available to ship surgeons upon the recommendation of their shipping company

The clinical teaching of the London School of Hygiene and Tropical Medicine is given at the Society's Hospital for Tropical Diseases, Endsleigh gardens, W C 1

GENERAL

Royal Northern Group of Hospitals

The Royal Northern Hospital, Holloway, London, N 7, is the main institution of the Royal Northern Group of Hospitals, which includes the St David's Wing for private patients, the Royal Chest Hospital, City road, E C, Grovelands Hospital (Recovery Branch), Southgate, the Maternity Nursing Association, and the Reckitt Convalescent Home, Clacton on Sea The total number of beds in the group is 480 Besides the honorary staff, there are six anæsthetists, two pathologists, medical and surgical registrars, resident medical officer, two resident house physicians, three resident house surgeons, two resident casualty officers, one resident obstetric surgeon, and one resident anæsthetist The large rectangular and circular wards, each of which contains 25 beds, the maternity ward and children's ward for children up to 5 years of age, the observation wards in the new Casualty Department, the six operation theatres, and out-patient department are designed with a view to offer the greatest facilities for clinical work The Special Departments include the following orthopædic, genito urinary, and neurological, physiotherapeutic, pathological, tuberculosis, venereal diseases, X ray and radiotherapeutic Patients are removed to the Recovery Branch by ambulance a few days after operation Demonstrations are given daily in the wards and out-patient departments Clinical assistants (qualified), clinical clerks, and pathological clerks are appointed in the general and special departments, and may receive certificates at the end of their terms of office The hospital for paying patients has recently been enlarged

Prince of Wales's General Hospital

This hospital, situated in Tottenham, is in the midst of a densely populated neighbourhood, and contains medical, surgical, gynæcological, and children's wards, having 238 beds There are special departments for gynæcological cases, diseases of the eye, ear, throat, and nose, skin diseases, medical electricity, radiography, and dentistry Operations are performed every afternoon of the week (except Saturday) at 2 30 P M Clinical instruction is given in the wards and out-patient departments, laboratories, and lecture hall in connexion with the North East London Post-Graduate College attached There are six resident medical officers, and clinical assistants are appointed under certain conditions Special intensive post-graduate courses are also held at intervals throughout the year

West London Hospital

This hospital has 220 beds Attached to the hospital is the West London Post-Graduate College. The practice of the hospital is reserved for qualified men and those referred in the final examinations. Instruction is given in the medical and surgical out-patient rooms and demonstrations are given in the wards. Clinical assistantships are obtainable in the various general and special out-patient departments. The accommodation for post-graduates consists of a lecture-room, together with reading writing, and class-rooms The hospital has a fully equipped pathological laboratory and museum The certificate of the hospital is accepted by the Admiralty War Office Colonial Office and India Office in cases of study leave and by the Conjoint Board of Examiners

National Temperance Hospital

The hospital (Hampstead road N W) contains 160 beds The medical and surgical practice of the hospital is open to students and practitioners Operations: Monday 1.30 P.M. Tuesday, 2 P.M.; Wednesday 2 P.M. Thursday 9.15 A.M.; Friday 11 A.M. Out-patient departments for the following classes of case have been opened dermatology, ophthalmology oto-rhino-laryngology diseases of the chest and of the rectum. There are also an out-patient gynæcological clinic, a fracture clinic and an artificial pneumothorax clinic

Hampstead General and North West London Hospital

In patient department Haverstock hill, N W ; out-patient department Bayham-street, Camden Town (138 beds—viz. 109 free 8 isolation and observation, and 21 paying or contributory). Serves Hampstead and the populous districts of Kentish Town and Camden Town The out patient and casualty departments are at Bayham-street, Camden Town. Hampstead casualties are received at Haverstock hill In addition, consultative clinics are held at Haverstock hill, where patients are seen upon presenting letters from their doctors. There is a post-graduate school free to the medical practitioners of the district; the courses are for the winter months

Metropolitan Hospital

This hospital has 150 beds 17 of which are reserved for children. The adult accommodation includes special wards for the reception of Hebrew patients, and there is a Kosher kitchen and Jewish cook. Operations are held on Monday Tuesday Thursday and Friday afternoons. The out-patient department is a large one and has facilities for the treatment of all diseases. Special departments comprising: neurological, ophthalmic rectal diseases diseases of women genito-urinary diseases of the throat and ear, eye and skin electrotherapeutics, dental and V D ; Jewish patients can attend special sessions Attached to the hospital is a tuberculosis dispensary for patients from the boroughs of Hackney and Stoke Newington.

Queen Mary s Hospital for the East End

This hospital has developed from the West Ham and Eastern General Hospital It has 219 beds and ministers to a very poor public Founded as a dispensary in 1861 and developing into a hospital in 1890 steady extensions have been made during this century A Royal Charter was obtained in 1917 and the hospital has become a valuable charity with a full medical staff of physicians and surgeons and specialists for gynæcology obstetrics, ophthalmological surgery radiology dermatology, and dental surgery The Fellowship of Medicine makes frequent use of the opportunities.

PSYCHOLOGICAL MEDICINE

Maudsley Hospital

The hospital contains 285 beds, and a large out patient department, dealing separately with children and adults. The clinical material covers practically the whole range of psychological medicine but chronic or unwilling cases are not admitted to the wards; there are facilities for clinical assistants at the hospital to observe such cases by attending the practice of an observation ward in the district In the clinical unit the teaching and research are directed by the professor of clinical psychiatry and the clinical director Appointments as non resident clinical assistant and other facilities for gaining clinical experience or for carrying out research are open to qualified medical practitioners There is a vacancy every six months for a resident clinical assistant. The clinical staff of the hospital consists of a professor who is also the medical superintendent a deputy superintendent a clinical director ten full time physicians, four half time physicians engaged in psychotherapy and two in diagnostic work in the out-patient department. There are also two full time research psychiatrists. With the hospital is associated the Central Pathological Laboratory of the mental hospitals of the London County Council, directed by the professor of pathology of mental disorder with an established staff of three members, and in addition seven research workers. Grants in aid are available for approved research. A course of lectures and demonstrations for the diploma of psychological medicine is held annually from January to June. The holding of an appointment as a clinical assistant at the hospital for a sufficient period meets the requirements of the different examining bodies in respect of practical study in psychological medicine An advanced course of lectures is held in the autumn each year

Bethlem Royal Hospital

A course of lectures and practical instruction for the Diploma in Psychological Medicine granted by the various universities and the Conjoint Board in association with St Bartholomew s Hospital medical school is held at the school, and at Bethlem Royal Hospital, twice annually, during the spring and autumn. Part A or Part B, however may be taken separately In addition to the above, clinical instruction in Psychological Medicine is given at Bethlem Royal Hospital every morning (except Wednesdays) at 11 A.M. A reduction is made to those who attend the Diploma Course. House physicians are appointed at Bethlem Royal Hospital for a term of six months, which may be extended. These appointments are made at the beginning of February May August and November in each year and the vacancies are advertised in the medical papers. Apartments, complete board attendance and laundry are provided and a salary at the rate of £150 per annum for the first three months, rising if commendable service be given, to the rate of £200 per annum for the second period of three months. Clinical assistants are often appointed from time to time for periods of three months or longer These are non salaried and non resident posts but partial board is provided. The physician superintendent at the hospital, Monks Orchard, Eden Park, Beckenham, will supply further particulars the courses have been arranged and schedules will be sent on inquiry

Tavistock Clinic

The courses of training arranged by the Tavistock Clinic (Institute of Medical Psychology) Malet-place London W C 1 are intended for post-graduate students, and those intending to specialise in psychotherapy The clinic provides facilities for the study and practice of psychoneurotic and early psychotic patients, and is recognised by the University of London for the requirements of the post-graduate diploma in psychological medicine under Regulation 8 Section 2 (d) and (e)

There is a *five weeks introductory course* in October and November three hours each day on Monday and Thursday afternoons. These lectures are now also open to fourth and fifth-year medical students. This is followed by a *systematic course* of lectures twice a week until the following June These lectures are open only to fully qualified medical practitioners. A *clinical course* of work and instruction, including nine hours' treatment of cases each week, with personal supervision of such treatment by a senior member of the staff, tutorials and case discussions, is limited to a membership of twelve students

The *complete course* of the clinic, for those proposing to specialise in psychotherapy, is now a two years' course Those who have completed the year's course may apply for the second year of instruction in clinical work, tutorials, study groups, &c

A *special course* of ten lectures on the neuroses in general practice is being given this autumn on Thursday evenings at 8 30 P M, beginning in October These lectures are open to all qualified doctors, and are especially intended for the general practitioner Lecture discussions on advanced psychopathology are taking place early in 1938, and are open only to those who have already attended the systematic course

NEUROLOGY

National Hospital, Queen-square

The hospital, with the convalescent home at East Finchley and branch at Clapham Park, contains 265 beds and cots The out-patient physicians attend every Monday, Tuesday, Wednesday, Thursday, and Friday at 2 P M., and the physicians on the same days *Clinical clerks are appointed under physicians and* clinical assistants to out-patient physicians Post-graduate courses of lectures and demonstrations are held twice every year, usually commencing in January and October, and lasting about nine weeks Special courses in neurological ophthalmology, neuro-pathology, and the anatomy and physiology of the nervous system are given The pathological laboratory is available for special work under the pathologist

West End Hospital for Nervous Diseases

The annual attendance at this hospital is between 38,000 and 40,000 at the out-patient department, Welbeck-street, W 1 The in-patient department, Outer Circle, Gloucester gate, Regent's park, provides 76 beds, including 25 cots for children, and is fully equipped with pathological, X ray (diagnostic and deep therapy), and other special departments The clinical and teaching facilities of the hospital fulfil the requirements of the examining bodies for the diploma in psychological medicine, and for the London University M.D degree, Part III Attendance on the general practice of the hospital is open to post-graduates There are opportunities for personal examination of cases In addition, systematic courses of instruction in neurology and in related subjects are held throughout the year Special courses are given for the D.P M and for the M R C P Tuition for senior undergraduates is also arranged. The courses of instruction in neurology consist of out-patient demonstrations, ward rounds in the in-patient department, and lecture demonstrations by the physicians and surgeons, clinical demonstrations of psychological cases are given by members of the psychiatric department, with pathological discussions, special demonstrations upon child guidance, and the neurological aspects of various subjects, including radiology, ophthalmology, orthopædics, physical medicine, and oto-rhino-laryngology A department of clinical research has been founded and any qualified persons desirous of working in this department should apply to the director The Savill Memorial prize (value £15 and medal) is offered biennially for competition among post-graduate students of the hospital. Honorary clinical assistantships are available in the out-patient department, and application for these should be made to the house governor, to whom application should also be made for particulars of the courses of instruction

St Marylebone Hospital for Nervous Diseases *

This hospital in Maida Vale, W, contains 85 beds, including 20 private wards and 6 pay beds Both in-patient and out-patient departments are open free to students, as well as to medical graduates The out-patient department is open every week-day except Saturday at 2 P M.

HEART AND LUNGS

Royal Chest Hospital

The Royal Chest Hospital, City-road, E C, associated with the Royal Northern Group of Hospitals, has accommodation for 84 in patients and a large out-patient department, open daily Special departments include Thoracic Surgery, Cardiology, Laryngology, Radiology, Electrocardiograph, Massage and Physical Exercises, and an Ultra-violet Light clinic Clinical Assistants are appointed to work with the physicians in the out-patient department Post-graduate courses are held three or four times a year The Tuberculosis Dispensary for Islington South is attached to the hospital

Brompton Hospital for Consumption and Diseases of the Chest

The hospital contains 368 beds, of which 57 are allocated to the surgical side and 98 to paying patients A further 150 beds are provided at the sanatorium at Frimley, which also contains beds for paying patients The beds for paying patients at the hospital are so divided up as to provide wards of two and five beds each at a small inclusive fee, and single bedrooms in which the fees are non inclusive In addition to the resident medical officer there are two resident surgical officers appointed annually, an assistant resident medical officer, who assists in the artificial pneumothorax clinic, and six resident house physicians, whose duties include attendance at the out-patients' and special departments, and one of whom serves as assistant to the Tuberculosis Officer for Chelsea, these officers are appointed for a term of six months each Post-graduates are admitted to the practice of the hospital Clinical assistants are appointed to the in patient and out-patient physicians, the surgeons, and the special departments of the hospital Clinical demonstrations in the wards, the out patient and special departments, are given throughout the year, and two special post-graduate courses of one week each, and three week end courses are held annually Special courses are also held in the pathological department The medical practice of the hospital is recognised by the Conjoint Board, the Society of Apothecaries, the universities of London and Wales, and the Medical Boards of the Army, Navy, and India Four special courses for students, of eight demonstrations each are held during the year before each final Conjoint Board Examination

London Chest Hospital *

(190 beds) Special Departments Surgical, Laryngological, Bronchoscopical, Radiological, Pathological, Electrocardiographic Assistants are appointed to the Clinics, and a limited number of research workers to the Pathological Department The in-patient staff visit generally in the afternoon, out-patients at 2 P M. Graduates are admitted on payment of fees which entitle them to attendance at clinics, post-mortem demonstrations, and operations Special demonstration and lecture courses are provided, and a club room Graduates desiring Assistantships in any department should address applications to the Head of that department. A Tuberculosis Dispensary (Boroughs of Bethnal Green and part Hackney) is established at the hospital

National Hospital for Diseases of the Heart

The practice of the hospital, with 46 beds and a large out-patient department, is open daily to post-graduates and others Systematic courses of instruction, with lectures and clinical demonstrations, are arranged during the winter and summer sessions; in addition an intensive course, of a fortnight's duration, takes place in January, and October of each year The hospital is fully equipped with all the modern instruments for the investigation of the diseases of the cardiovascular system and facilities exist for those requiring practical instruction in electrocardiography X rays, and other graphic methods Clinical Assistants in the out-patient department are appointed from time to time.

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* Formerly the Hospital for Epilepsy and Paralysis

* Formerly City of London Hospital for Diseases of the Heart and Lungs Victoria Park E 2

DISEASES OF WOMEN AND CHILDREN

Hospital for Sick Children, Great Ormond Street.

The hospital contains 257 beds and has an out-patients department attended by about 30,000 new cases each year Clinical instruction is given daily by members of the honorary medical staff There are asthma dental rheumatic venereal diseases skin, aural ophthalmic and child guidance clinics, and X ray and electrotherapy departments Morning sessions 10 A.M to 12 noon out-patients clinics Afternoon sessions 2–4 P.M. include ward visits and surgical operations The practice is open to students of both sexes who have completed four years medical study and also to qualified medical men and women who may attend for periods of one week upwards the year being divided into three terms of approximately thirteen weeks. Special lectures are given at the hospital weekly; details of these appear in the medical notes published from time to time in the columns of this journal Clinical clerks are appointed once a month these appointments being open to fourth and fifth year students of recognised medical schools Time spent in clerking and dressing is recognised by the Universities of London Oxford and Cambridge as part of the final curriculum. Facilities are available to post-graduates for obtaining theoretical and practical instruction in clinical pathology bacteriology and medical biochemistry in the laboratories.

Queen Charlotte's Maternity Hospital and Midwifery Training School

This hospital formerly Queen Charlotte's Lying in Hospital, is situated in Marylebone-road N W The hospital receives over 2000 patients annually besides having a large out-patient department. Medical students and qualified practitioners are received at all times of the year They have unusual opportunities of seeing obstetric complications and operative midwifery on account of the very large number of primiparous cases—nearly one-half of the total admissions. Clinical instruction is given on the more important cases which present themselves They also receive valuable instruction in the Antenatal and Child Welfare Departments and Postnatal Clinics, where over 4000 patients attend yearly Special Lecture-demonstrations are given by members of the staff Pupil midwives and maternity nurses are received and specially trained Courses in obstetric analgesia are also given to midwives. A Residential College provides accommodation for students and qualified practitioners (both men and women) and is opposite the hospital with which it is in telephonic communication.

The Isolation Block (30 beds) for Puerperal Fever and Puerperal Pyrexia, which has been built on the new site at Ravenscourt Park, Hammersmith was opened for the reception of patients in September 1930 and the Research Laboratories, which have been erected adjoining this block, are in full working order Students may attend the clinics conducted by the staff at the Isolation Block, and demonstrations are also given at the Research Laboratories.

City of London Maternity Hospital and Midwifery Training School

This hospital (City road E C) admitted over 1724 mothers last year and 2701 were attended at its antenatal clinics Residential accommodation is provided for two male students, who are afforded excellent facilities for observing operative midwifery and obstetrical complications Twenty deliveries are guaranteed to students entering for the four weeks course to encourage them to take the longer period Certificates acceptable by the examining bodies are issued. Pupil midwives are received for training and refresher courses are provided for practising midwives Post-graduates are admitted to the antenatal clinics by arrangement and week-end post graduate courses are arranged from time to time Courses in the administration of analgesia are also provided A three months intensive residential course for the midwife-teachers examination of the Central Midwives Board has been inaugurated, the first of its kind in this country

Royal Waterloo Hospital for Children and Women

This hospital has now 130 beds, while the latest buildings include a Nurses Home and private pay beds. It has a full staff of surgeons physicians and gynæcologists, and also special departments Amongst the many valuable additions to the equipment of the hospital is an Electrocardiograph apparatus A well equipped Orthopædic Department is in use and the Physiotherapeutic and Electrical Department has been extended and re-equipped There are facilities for post-graduates to attend the general and special clinics in medicine and surgery for in patients and for out-patients including a genito-urinary clinic, a clinic for varicose veins a L.C C Clinic for children suffering from rheumatic fever and chorea, and the X ray department for gastro intestinal diagnosis Particulars of post-graduate courses, which are held from time to time, can be obtained from the Secretary of the hospital.

Victoria Hospital for Children

This hospital in Tite-street Chelsea, S W, contains 188 beds and a large out-patient department the home at Broadstairs has 50 beds There are two private wards where patients may be under the care of any medical practitioner holding an appointment on the staff of a recognised hospital and the question of payment for his fees is arranged between him and the child's parents

Queen's Hospital for Children

This hospital for the sick children of the poor up to 14 years of age was formerly known as the North-Eastern Hospital for Children There are 100 beds in London (Hackney road, E 2) and 44 at the seaside branch Little Folks Home Bexhill Special departments in Ear Nose Throat, Skin and Eye Psychiatrics and Dentistry Rheumatic Clinic in coöperation with L.C C schools twice weekly A radiologist attends four times weekly There are massage and light departments and a special whooping-cough physician. The practice of the hospital is open to students by arrangements with the medical staff.

Paddington Green Children's Hospital

This is a hospital of 52 beds with a large out-patient department and a full staff with Eye, Ear, Skin Light Psychology Rheumatism X ray and Dental departments The facilities which it offers for observation of clinical practice are used by the Fellowship of Medicine

Hospital for Women Soho

This hospital in Soho-square W., contains 81 beds. The teaching is available for post-graduates only in limited numbers Operations take place on Fridays at 9 30 A.M Wednesdays and Thursdays at 2 P.M. and Mondays and Fridays at 4 P.M. The X ray department is supplied with the latest installation both for diagnosis and treatment and experience can also be gained in the treatment of malignant disease by means of radium Incorporated is the

London School of Gynæcology, comprising attendance at out-patient department, operating theatre, clinical lectures, and X ray treatment

Samaritan Free Hospital for Women

Contains 88 beds Qualified practitioners are admitted as clinical (gynæcological) assistants to both the in- and out-patient departments A new radiological department has been opened with modern equipment for deep X ray therapy Full particulars may be obtained from the Secretary to the Medical Committee at the hospital, Marylebone road, N W

Princess Elizabeth of York Hospital for Children

The hospital has 135 beds and is situated in Glamis-road, Shadwell, E 1 Resident posts at the hospital are recognised by the Conjoint Board as fulfilling the necessary conditions for the Diploma of Child Health Similar recognition is accorded to clinical assistantships at the hospital The number of these posts is limited to four There is an orthopædic clinic on Wednesdays and a rheumatic clinic on Fridays Physicians and surgeons pay ward visits every morning and periodical intensive courses in pædiatrics (medical and surgical) are given Post-graduate courses are arranged at the hospital by the Fellowship of Medicine, when the honorary staff give lectures

An appeal has been launched and building operations have already been started to build a complete country hospital and convalescent home on an estate of a hundred acres at Banstead, the gift of a generous donor The hospital's intention is to maintain an out-patient department with sufficient emergency beds as a clearing-station at Shadwell, and to transfer its in-patients by motor ambulance to Banstead, only fifteen miles distant The present convalescent home now at Bognor will be transferred to Banstead, and the whole will be under the charge of the honorary staff, when it is hoped that further facilities for post-graduate instruction may be offered.

Chelsea Hospital for Women

This hospital has 104 beds, 18 for patients paying £5 5s a week and moderate fees to the surgeons for operations There is a convalescent home of 32 beds at St Leonards In the out-patient department the patients are seen at a nominal payment or with subscribers' letters The hospital caters for post-graduate teaching In the out patients' department clinical assistantships can be obtained which entitle the holder to attend and examine patients under the instruction of the visiting surgeons The operating theatre is open to visitors, and all operations are demonstrated and discussed by the surgeons The Pathological Department contains one of the finest gynæcological museums in the country Special intensive courses, with lectures and special demonstrations, are held three times a year through the organisation of the Fellowship of Medicine

Evelina Hospital and Belgrave Hospital

The Evelina Hospital, Southwark (80 cots), and the Belgrave Hospital (76 cots), Clapham-road also give facilities for out-patient practice

CANCER

Royal Cancer Hospital (Free)

The hospital, situated in Fulham-road, S W, contains 118 beds for poor persons afflicted, who are admitted free The Out-patient Department is open every week-day, except Saturday, at 2 P M., also Wednesday morning at 10 and Saturday morning at 10 A course of study in Physics and Radiology, qualifying for the Diplomas in Medical Radiology of the University of London and the Conjoint Board, is given The hospital is a recognised teaching school of the University of London in Medical Radiology, Experimental Pathology, and Pathological Chemistry A Resident Medical Officer is appointed for a period of 12 months at a salary of £200 per annum Senior and Junior Resident House Surgeons are appointed for a period of 6 months at a salary of £50 Non resident assistants are appointed in the Radiological Department for a period of 12 months at salaries of £350

Mount Vernon Hospital

The hospital contains 130 beds for surgical cancer cases Clinical Demonstrations are given by the visiting Surgical Staff at the hospital at Northwood Clinical assistants are appointed to surgeons in the wards Diagnostic and follow-up departments, 14, Riding House-street, W

Marie Curie Hospital

This hospital, which is officered by medical women, is a centre for the radiological treatment of women suffering from cancer and allied diseases The in patient department contains 39 beds, of which eight are for private patients There is a daily out-patient clinic to which cases are sent for diagnosis and at which those already treated are kept under observation The hospital has departments for radium and deep X ray therapy, and for X ray diagnosis The pathological department contains laboratories for clinical and experimental research. The practice of the hospital is open to qualified medical visitors, and one graduate wishing to study the subject of radiology is accepted for full time service for four to six months

OPHTHALMOLOGY

Royal London Ophthalmic Hospital

The attendance at Moorfields Eye Hospital (Moorfields, 1804–1899), City-road, E C (200 beds), is now very large Operations are performed each day from 10 A.M. to 1 P M. and four surgeons attend daily Students are admitted to the practice of the hospital and special courses of instruction are given, which extend over a period of five months, by members of the surgical staff and certain outside lecturers, beginning in October and March The instructions and classes are arranged to meet the requirements for the various diplomas in Ophthalmology, both for the preliminary examinations in Anatomy, Physiology, and Optics, and those subjects required in the second part. Students of the hospital are eligible as house surgeons, out-patient officers, and clinical assistants The senior resident officer and three house surgeons are appointed every six months Twenty four out-patient officers are appointed each year Clinical assistants are appointed every three months. The rebuilding of the Out-patients' Department, Medical School, and Private Wards is now completed, and the building is in use All these departments are now very much improved, as well as the arrangements for instruction

Royal Westminster Ophthalmic Hospital

This hospital, in High Holborn, W C 1 (100 beds, including 14 rooms for paying patients), has removed from its original site at Charing Cross to much larger premises, well adapted for teaching purposes Clinics are held in the afternoons from 1 30 P M. Operations are performed daily in the theatres from 2 30 P M Lectures and practical classes in the various branches of ophthalmology for D O M.S examinations, including operative surgery, bacteriology, and pathology are held during the winter and summer sessions at 5 P M. Next classes start Oct 13th, 1937 The practice of the hospital is open to both men and women practitioners, and medical students Post-graduate students at the hospital are eligible for appointment as registrar, house surgeon, assistant house surgeon (2 appointments), refraction officer (8 appointments paid), and senior and junior assis tants. A scholarship of £100 is awarded annually for research work.

Royal Eye Hospital

There are 40 beds at this hospital, which is situated in St George s-circus Southwark, S E. and an annual attendance of nearly 80 000 out-patients. The staff attend daily Mondays to Fridays at 2 P.M. and on Saturdays at 0.30 A.M., when clinical instruction is given Special classes held in May and October are planned to meet the requirements of students preparing for the D O M.S and similar examinations, and cover Anatomy Physiology, Optics, Clinical Ophthalmology, Operative Surgery and Pathology Clinical Classes in medical ophthalmology are held for candidates for the M.R C.P examinations. A Course suitable for general practitioners is held in April under the auspices of the Fellowship of Medicine. Apart from the Honorary Staff of 6 Surgeons there are also a Pathologist an Assistant Pathologist, a Bacteriologist 3 resident House Surgeons, 11 Chief Clinical Assistants 24 Clinical Assistants 14 L.C.C Refraction Officers 10 Hospital Refractionists, and 2 officers in charge of the Squint Training Clinics

Reference departments for general medicine, neurology, dental treatment, ear nose and throat investigations, orthoptic training and radiology including ultra violet therapy, are available The pathological and bacteriological departments are available to ophthalmic surgeons and institutions desiring reports on specimens cases of interest being dealt with without charge A Research Scholarship in Ophthalmology to the value of 100 guineas per annum is awarded yearly

Central London Ophthalmic Hospital

This hospital, in Judd-street St. Pancras, W C., has 51 beds, and clinical teaching is given daily The Pathological and Bacteriological Laboratories are available for the use of any ophthalmic surgeons who desire to send specimens for examination a small fee is charged for a report. There is an Orthoptic Department for the treatment of cases of squint, and pupils are taken for training in this work. Voluntary hospital ophthalmic clinics are held on Mondays and Thursdays at 4.30 P.M. Ten private rooms are available for private patients A department for research into and development of the corneo-plastic surgery of the eye has recently been established

GENITO-URINARY AND VENEREAL DISEASES

London Lock Hospital and Home

There are 74 beds for men women and children Male out-patients are seen at 91 Dean-street, Oxford street W 1 at any time from 10 30 A.M until 10 P.M. daily (Sunday noon–10 P M.) Intravenous injections are given at every clinic Irrigations for males are given daily from 9 A.M. to 10 P.M. Female out-patients and children are seen daily at 283 Harrow road Paddington W 9 from 9 A.M until 8 P.M. Irrigations for females are given at any time The hospital is linked up with the Fellowship of Medicine special courses of lectures are held in May and November each year and application for tickets should be made direct to the Secretary of the Fellowship

Only a limited number of practitioners and students are permitted to attend the practice of the Female Lock Hospital and application should be made to the Dean at the Male Lock Hospital between the hours of 11 A.M. and 5 P.M.

St Mark s Hospital for Cancer Fistula and other Diseases of the Rectum

At this hospital in City road E C (founded 1835), for men and women, there are 63 general beds and 9 private beds. Operations are performed on Mondays Tuesdays Thursdays, and Fridays at 2 P.M. and Saturdays at 11 A.M. Medical practitioners and students are invited to the operations and to the clinical instruction in the wards and in the out patient department. Four weekly courses are held during the year in coöperation with the Fellowship of Medicine

St Paul s Hospital for Urological and Skin Diseases

This hospital is situated in Endell street, Holborn It specialises in the treatment of patients suffering from diseases of the kidneys, bladder prostate from stone stricture or other urinary diseases, and from affections of the skin There are 33 beds ten being for private patients and four for women. The hospital is open from Mondays to Fridays for out-patients (men, women and children) at 1.30 P M. and 5 P.M. (Saturdays 1 30 P.M. only) The operating days are Mondays, Wednesdays *and Fridays in the afternoon* Cystoscopy sessions are held on Tuesdays, Thursdays, and Fridays in the morning Skin cases are seen on Mondays and Fridays at 9 A.M

St Peter s Hospital for Stone

The hospital in Covent Garden is thoroughly up to date in all departments and research is still carried out with radium specially loaned for the purpose by the British Empire Cancer Campaign Medical practitioners and students are invited to attend the practice of the hospital in the out-patient department, excepting that the only clinic open to medical women is that held at 9 30 A.M. Fridays for women and children The operating theatre is open to medical visitors as follows Mondays Tuesdays, Thursdays 2 P M. Fridays 3 P.M. Special courses of lectures and demonstrations lasting a fortnight are held in January May and November by arrangement with the Fellowship of Medicine

All Saints Hospital

The in patient department of the All Saints' Hospital for Genito-Urinary Diseases is at Austral street, West-square St. George s-road S.E contains 65 beds, including those in 4 private wards and cubicles and the terms of admission are free or by payment according to means. The out-patient department provides clinical instruction through the Fellowship of Medicine in addition to which demonstrations in cystoscopy and other branches of genito-urinary work are available for all medical practitioners at the out-patient department on Monday Tuesday Wednesday Thursday Friday and Saturday afternoons at 2 P.M without fee A new X ray department embodying the latest developments in radiology as applicable to urological cases, was opened last June.

ORTHOPÆDICS

Royal National Orthopædic Hospital

This institution situated in Great Portland-street (400 beds) is a good example of the fusion of scattered activities for the creation of an effective whole The three orthopædic hospitals of the metropolis were combined for the formation of this central institution at the instance of King Edward s Hospital Fund with the result that the grants from this Fund and the income from subscriptions can now be used to far better purpose and with economy The hospital has also been approved by the Ministry of Health for the treatment of surgical tuberculosis, the connexion between orthopædics and the therapeutics required in many forms of tuberculosis having become obvious. Country branch at Brockley Hill, Stanmore (280 beds) Both branches of the hospital are residential schools for physically defective children, certified by the Board of Education The hospital provides also a convalescent branch at Stanmore for 44 children and a residential training college for 100 cripples aged 16–22 A post-graduate course of 14 days is held about March each year The out patient department is open every week day except

Saturday, at 1.30 P.M. The evening clinic on Tuesdays from 6 P.M. to 8 P.M.

EAR, NOSE, AND THROAT

Central London Throat, Nose and Ear Hospital

This hospital in Gray's Inn-road with recovery home at Ealing (104 beds) is open daily to all qualified medical practitioners on presentation of their visiting cards. Demonstrations of the cases and clinical instruction are given daily by the chief surgeon of each clinic and in the operating theatre. Lectures each Friday at 4 P.M. Courses in Anatomy and Physiology for Part I of the D.L.O. Examination by a Teacher of Anatomy and Clinical Courses by the Honorary Medical Staff for Part II of the Examination are given twice yearly, in May and October. In addition there are Peroral Endoscopy and Pathology and Bacteriology classes. Courses in methods of Examination and Diagnosis are given at frequent intervals during the year. Clinical Assistants are appointed and are expected to hold office for at least three months. They are required to attend twice weekly at 1.30 o'clock for the afternoon, and at 4.30 o'clock for the evening clinics, to take notes of the new cases and thus have an opportunity of examining the patients.

Golden-square Throat, Nose, and Ear Hospital

The hospital (101 beds), which has absorbed the London Throat Hospital, is situated in Golden square, near Piccadilly Circus. Clinical instruction in the diagnosis and treatment of disease is given daily in the out-patient department from 2 to 4 P.M., and on Tuesdays and Thursdays from 6.30 to 7.30 P.M. There is an annual out-patient attendance of 35,000. Minor operations are performed on Mondays and Fridays at 9.30 A.M. Practitioners and post-graduate students are admitted to the practice of the hospital, and clinical assistants are appointed periodically.

Metropolitan Ear, Nose, and Throat Hospital

The hospital is in Fitzroy square and contains 22 beds. The out-patient department is opened daily at 2 P.M., Saturdays 1 P.M., to all medical practitioners and senior students for acquiring clinical instruction and technical knowledge. Operations upon in-patients are performed on Tuesdays, Wednesdays, Thursdays, and Fridays at 10 A.M. Clinical Assistants are appointed as vacancies occur.

SKIN

London School of Dermatology

The London School of Dermatology, St. John's Hospital for Diseases of the Skin, has an in-patient department (40 beds) at 202, Uxbridge road, W., and out-patient clinics, at 5, Lisle street, W.C. 2, are held daily at 2 and 6 P.M. (Saturdays at 2 P.M. only), when demonstrations are given on the cases presenting themselves. The Chesterfield Lectures, constituting a systematic course in dermatology, are given on Tuesdays and Thursdays at 5 P.M., during October and November and January and February, by the hon. medical staff of St. John's Hospital and the physicians in charge of the Dermatological Departments of the London Teaching Hospitals. The lectures are free to those attending the practice of the hospital and to registered medical students. At the end of the course an examination is held for the Chesterfield Medal in Dermatology, and is open to all medical practitioners. A summer course of lectures is also held during the month of May each year. The electrical department is open, Monday to Friday inclusive, from 2 to 7 P.M. Laboratory Courses in the Pathology and Bacteriology of the Skin can be arranged. A minor examination, if desired by post-graduates, is held by the honorary medical staff of St. John's Hospital in October or November of each year.

London Skin Hospital and Hospital for Diseases of the Skin

The hospitals admit graduates to their practice, which is among out-patients. London Skin Hospital, daily at 2 P.M. and 5.30 P.M., Saturdays 2 P.M. only. Hospital for Diseases of the Skin, daily at 2 P.M., and Fridays, 5.30 P.M., not on Saturdays.

CENTRES OUTSIDE LONDON AFFORDING EDUCATIONAL FACILITIES

Nearly every hospital of a general character in the country having more than 150 beds falls within this category, and certain of them have already been noticed in connexion with the universities to which their clinical practice is attached. The hospitals vary much in size and scope.

The following alphabetical list includes the provincial hospitals which are recognised by the English Conjoint Board for a part of the required training in medical and surgical practice through clerkships and dresserships. Further information can be obtained from the secretaries of the institutions.

Bath Royal United Hospital

This hospital contains 284 beds of modern construction, 72 of which are for paying patients only; it possesses bacteriological and pathological laboratories, X ray, massage, obstetric and gynæcological, ear, nose, and throat, skin, neurological departments, and fracture service. V.D. clinics are held on Tuesdays for women, and on Fridays and Saturdays for men, at 5 P.M. A resident staff of two house physicians is maintained, together with three house surgeons, the appointment of the latter being recognised by the Royal College of Surgeons to qualify candidates for the final fellowship examination. A post-graduate course is held every autumn and a programme of clinical ward rounds is carried out during the first six months of each year.

Bedford County Hospital

This hospital at Bedford has 124 beds, including 15 beds in the paying and 13 beds in the maternity wards; Ear, Nose, and Throat Departments, and X Ray and Pathological Departments. There is in connexion with the institution a convalescent home (20 beds) at Aspley Heath, near Woburn Sands. The hospital is approved by the English Conjoint Board for the examinations.

Berkshire Royal Hospital

This hospital at Reading, which contains 274 beds, includes an Out-patient Department, a Casualty Department, an X Ray and Radiotherapeutic Department, Electrotherapeutic and Massage Department, an Orthopædic Department, an Orthoptic Clinic, a V.D. Clinic, a Laboratory, an Eye Theatre, Eye Wards, a Maternity Ward, a Paying Patients Unit, and a Private Nursing Staff, and two motor ambulances. The hospital is approved as a Training School for Nurses and by the Ministry of Health for V.D. Treatment. The Blagrave Branch, Calcot, contains in addition to the above, 64 beds for cases of disease of bones and joints and those requiring *open-air treatment*.

Bradford Royal Infirmary

This hospital contains 345 beds and, in addition, has 50 recovery beds at the Woodlands Convalescent Home, Rawdon. The honorary acting staff consists of 3 physicians, 4 surgeons, 1 radiologist, 2 laryngologists, 2 ophthalmic surgeons, 1 dental surgeon, 2 assistant physicians, 2 assistant surgeons, together with 6 anæsthetists, 1 pathologist, 1 assistant pathologist, 1 physician in charge of radium therapy department, 1 resident surgical officer, 1 resident medical officer, 2 house physicians, and 5 house surgeons. There are special clinics for orthopædic nervous diabetic arthritic and blood cases, for electrotherapeutic and sunlight treatment, and for radium therapy cases A self-contained block for 70 paying patients adjoins the new infirmary

Coventry and Warwickshire Hospital

There are 307 beds available at the main hospital at Coventry (established 1840) and 40 beds at the Alcock Convalescent Hospital Keresley (three and a half miles distant) which is used as an annexe. At the main hospital there are separate medical surgical maternity children s, and accident wards also separate ophthalmic block complete with its own Theatre There are separate departments for clinics for ear nose and throat diseases, X ray, electrical, and sunlight clinics also V.D clinic There is also an up to-date pathological laboratory and cardiograph department The hospital is recognised for the D O M.S and the D L.O

Derbyshire Royal Infirmary

This general hospital at Derby (302 beds) was rebuilt in 1802–94 In recent years there have been numerous alterations and additions to keep pace with modern requirements The hospital is built on the pavilion system and provides, in addition to the usual Medical and Surgical blocks, a separate Ophthalmic block of 40 beds, a separate Children s block of 34 beds (Medical and Surgical) Gynæcological Wards, and an Ear Throat, and Nose Department. There is a large and well-equipped Out patient Department also separate Orthopædic X Ray, Electrical Pathological Orthoptic, and Venereal Diseases Departments The salaried Medical Staff consists of a non resident Staff of 1 Surgeon in charge of X Ray and Electrical Departments 1 Surgeon in charge of Venereal Diseases Department 1 Pathologist 5 Anæsthetists, and a Resident Staff of 5 House Surgeons, 1 House Physician, and 1 Assistant House Surgeon and Casualty Officer Registered Medical Students are admitted to witness the medical and surgical practice on payment of fees

Devon and Exeter Royal Hospital

The hospital at Exeter contains 280 beds (including special children s wards) and has a good library museum post-mortem room and pathological laboratory A new out-patients department has special wards for sepsis and fracture cases, and a new dental department. Attendance on the practice of this hospital qualifies for all the examining boards. The Victory ' wing built for the treatment of discharged disabled soldiers and sailors is now occupied by male and female surgical patients. The electrical and massage department now forms one of the most important sections of the hospital At the department for the treatment of genito-urinary diseases there are three sessions per week, two for men at 3 P.M. and 7 P M. and one for women at 3 P.M. Doctors in practice may use the museum and library

Prince of Wales s Hospital Plymouth

The institution incorporates and amalgamates the South Devon and East Cornwall Hospital Plymouth (240 beds) the Central Hospital Plymouth (50 beds), the Royal Albert Hospital Devonport (60 beds) Special departments include: Pathological X Ray Deep Therapy Cardiographic Ultra violet Rays, Electrotherapeutic Orthopædic, Gynæcological Aural Dental, Ophthalmic and Neurological; also Medical and Surgical Out-patients. Pensioners are received as in and out-patients The hospital has been approved by the National Radium Commission as a Regional Centre for the South West. A self-contained unit of 24 Pay Beds and Theatre Suite is now provided. The hospital is recognised by the Royal College of Surgeons for purposes of the final examination for the diploma of F.R C.S

West of England Eye Infirmary

Students of the Exeter hospital can attend the practice of the Eye Infirmary (55 beds) A ward is set aside for newly born babies suffering from infectious eye diseases Mothers with babies are accommodated. A fusion training department has now been set up under the direction of an orthoptician

Gloucestershire Royal Infirmary and Eye Institution

This hospital at Gloucester has 225 beds An Electrical and Massage Department has been established and Venereal Clinic opened also Ear, Nose, and Throat Department X ray, Deep X ray Therapy Radium Electrocardiograph, and Ultra violet Ray Departments, Orthopædic Department, Dental Department Pathological Laboratory, and Neurological Clinic There are 16 beds for paying patients in the new block, and accommodation for six more is being constructed.

Hampshire Royal County Hospital, Winchester

This hospital which was founded in 1736, contains 167 beds. There is a private nursing staff attached The building and amenities are completely up to date; there are an efficient Out-patient Department, a Pathological Laboratory Paying Patients Wards, and an Electrical and Massage Department A new Children's Block has been opened

Hull Royal Infirmary

This hospital contains 265 beds plus 100 beds at the branch hospital at Sutton-on Hull and has undergone steady additions and improvements including up-to-date Ophthalmic Radiological Deep Therapy and Radium, Nose Throat, and Ear Dental V.D Violet Rays and Pathological Departments, and a Clinic for Functional Nervous Diseases was opened in 1931, under the Mental Treatment Act 1030 Extensions in recent years include a new Operating Theatre Nurses Home, and extensions to the old X Ray Electrical, and Out-patient Departments The Resident Staff consists of 1 Resident Surgical Officer 2 House Physicians, 2 House Surgeons, 1 Surgeon to Special Departments, 2 Casualty Officers Sutton Branch: 1 House Surgeon and 1 House Physician An annexe at Withernsea has accommodation for 30 patients The two house physicians appointments, and that of the house physician at the Branch Hospital, are recognised by the University of London for the M.D Branch I (General Medicine) examination It also recognises the posts of senior house surgeon second house surgeon and house surgeon of the Branch hospital for the M S Branch I (General Surgery) examination The post of house surgeon to the Special Departments is recognised by the Conjoint Board of the Royal Colleges for the examinations for the Diplomas in Ophthalmic Medicine and Surgery and Laryngology and Otology The hospital is also recognised by the Royal Colleges for the F R C.S examinations

Kent and Canterbury Hospital

The work of the hospital was transferred in July to a new building containing 181 beds. The new hospital incorporates all the modern improvements of hospital construction and contains accommodation for 18 private patients. It has a large casualty department which has been prepared in anticipation of the fracture clinic shortly to be established and has been promised a gift of radium for the treatment of cancer Special departments include ophthalmic ear, nose, and throat, actinotherapeutic deep X ray and pathological The hospital is recognised for the purpose of M D and M.S examinations and pupils of the staff are admitted to the practice of the hospital

Leicester Royal Infirmary

At the Leicester Royal Infirmary there are 492 beds (children's 80 and venereal diseases 15), 101 additional beds at recovery convalescent homes for the reception of pre-convalescent cases A rebuilding scheme has been carried out providing modern operating theatres, three new wings, a self-contained out-patients' department, pathological laboratories and post-mortem rooms, and special departments The Children's Hospital was reconstructed and enlarged, and the Nurses' Home recently enlarged to accommodate 220 nurses, at a cost of £55,000 Extensions contemplated to Casualty and X Ray Departments There are 13 resident salaried medical officers—viz, four house surgeons, two casualty officers, three house physicians, three anæsthetists, one dresser The posts are filled half-yearly—April and October—and afford exceptional opportunities for post-graduate experience Senior students are appointed as dressers and are given an honorarium (applications to the House Governor) A post-graduate course of lectures is arranged annually by the Leicester Medical Society, and clinical classes are held for graduates preparing for M D and M R C P

Norfolk and Norwich Hospital

This hospital at Norwich has at present 417 beds There is a convalescent home with accommodation for 64 patients at Cromer The Resident Medical Staff consists of one Resident Surgical Officer, one House Physician, two House Surgeons, one Orthopædic House Surgeon, one House Surgeon to the Ear, Nose, Throat, and Eye Department, and one Casualty Officer There is also a Private Patients' Home which has at present 25 beds Students are admitted to the practice of the hospital for a fee of £5 5s for six months

Northampton General Hospital

In 1926 a new isolation block of 30 beds was opened. The number of beds is 340 There is an up to date Pathological Laboratory, also X ray and therapeutic department and V D clinic Two new operating theatres have been built, and a new ophthalmic in-patient department has recently been completed, also a new deep X ray therapy department A maternity home of 32 beds is now in use and a new children's department and ear, nose, and throat department are being built, also a nurses' home and a new out-patient department

Nottingham General Hospital

There are at this hospital 386 beds available for medical and surgical patients, and 110 beds are in the detached branch, known as "The Cedars" Branch of the General Hospital The honorary staff includes 3 Physicians 2 Assistant Physicians, 4 Surgeons, 3 Assistant Surgeons, 1 Aural Surgeon, 2 Assistant Aural Surgeons, Surgeons in charge of Radium-therapy and Orthopædics, a Physician in charge of the Skin and Ultra-violet Light Departments, 2 Radiologists, 1 Pathologist, 3 Anæsthetists, and Surgeon-Dentist The special departments are the Ear, Nose, and Throat, Skin, Pathological, Dental, Massage, X Ray, Deep X Ray Therapy, Orthopædic, Fracture, Electrotherapeutic, Ultra-violet Light The Resident Medical Staff consists of 2 House Physicians, 4 House Surgeons, 1 Orthopædic House Surgeon, 1 Aural House Surgeon, and 2 Casualty Officers The hospital is a recognised training school for nurses

Portsmouth Royal Hospital

The hospital contains 250 beds There are Medical, Surgical, X Ray, Massage, Gynæcological, Orthopædic, and Urological Out patients' Departments Further particulars may be obtained from the Secretary

Preston and County of Lancaster Queen Victoria Royal Infirmary

This is a general hospital with 365 beds, including 72 at two homes of recovery In addition to the medical and surgical wards, there are special wards for eye, ear, nose, and throat conditions and venereal diseases, also a maternity hospital of 47 beds and antenatal department (recognised by the Central Midwives Board) The special departments include bacteriological, pathological, biochemical, X ray, including superficial and deep therapy, electrocardiograph, light (including Finsen installation), neurological, electrotherapeutical, ophthalmic, aural, orthopædic, dental, venereal diseases (including daily intermediate treatment) Radium treatment is given at the hospital in conjunction with the Manchester Radium Institute The visiting staff consists of 5 surgeons (4 in consulting practice), 2 orthopædic surgeons, 3 physicians, 1 obstetrician, 3 radiologists, 2 eye and aural, 2 pathologists, 3 anæsthetists, 1 medical officer to electrotherapeutic department, and the resident staff—R S O, 3 house surgeons, 1 casualty officer, 1 house physician, and 1 obstetrical house surgeon

Salisbury General Infirmary

This hospital at Salisbury contains 195 beds Maternity and antenatal ophthalmic wards, and ear, nose, and throat wards, maternity and child welfare clinic The buildings are now in course of reconstruction In the extended hospital there will be 225 beds, and there will be 15 new single bed paying wards, increased ophthalmic in-patient accommodation as well as new and enlarged out-patient accommodation The extensions should be completed in 1938

Salop Royal Infirmary

This hospital at Shrewsbury contains 185 beds, including a very modern children's ward unit, and a special maternity unit for difficult cases Extensive alterations are at present in progress and will ultimately increase the beds of the hospital to 200, and will include a new double operating theatre unit A new private patients' wing is also being erected The staff consists of the following honorary officers 1 consulting physician, 2 consulting surgeons, 3 physicians, 3 surgeons, 3 anæsthetists, 1 obstetric surgeon, 1 radiologist, 1 physician in charge of electrocardiograph department, 1 consulting ophthalmic surgeon, 1 ophthalmic surgeon, 1 consulting alienist, 1 health officer, 3 dental surgeons, and 4 resident officers The special departments are electrocardiograph, X ray, massage, electrical therapeutics, ultra-violet ray There are large out-patients', accidents, and casualty departments

South Hants and Southampton Royal Hospital

This hospital at Southampton contains 281 beds and has every facility for clinical instruction There have been many alterations and additions in recent years and further extensions are at present in process, including the provision of a 220 kv deep X ray plant and special cancer wards The honorary staff consists of 4 physicians, 4 surgeons, 3 anæsthetists, 2 radiologists, 2 ear, nose, and throat surgeons, 1 dermatologist, 1 ophthalmic surgeon, and 3 dental surgeons, there are also 1 pathologist, 1 physician in charge of radium department, and 6 resident officers Special departments ear, nose, and throat, ophthalmic, dermatological, electrocardiograph, X ray, massage, and electricity, ultra-violet ray, radium (regional radium centre), pathological institute, and large out-patient department Three house surgeons' posts are recognised for the final F R C S and one for the D L O

Staffordshire General Infirmary

This hospital was established at Stafford in 1766, has over 100 beds, and is a training school for nurses A new building is being erected comprising massage, X ray, and electrical departments on the ground floor, a ward of 18 beds and a two bedded ward, together with a children's ward on the first floor, and 16 single bedded wards for private patients on the second floor. The present children's ward is being converted into a casualty department.

Staffordshire (North) Royal Infirmary

The New Infirmary opened in 1869 at Hartshill, Stoke-on-Trent, built on the pavilion plan, has accommodation for 393 patients, including Children's wards, and a Private Patients Department of 36 beds. The infirmary is a Regional Radium Centre (National Radium Commission) and has the following departments: Bacteriological, Pathological, Biochemical, Ophthalmic, X Ray, Electrotherapeutical (including Ultra violet Ray Lamps), Electrocardiograph, Aural, Dermatological, Neurological, Orthopædic, Dental, Plastic and Venereal Diseases Clinics including daily Intermediate Treatments. Recent extensions comprise a new ward block, new X Ray, including Deep Ray Therapy, and Orthopædic Departments, with connecting corridors to the existing Infirmary, large extensions to the nurses' home, new boiler house, new chimney stack, new laundry, new surgery and casualty department, new ophthalmic wards, and a new pay beds department.

East Suffolk and Ipswich Hospital

This institution, situated in Ipswich, the county town of Suffolk, has 350 beds, of which 40 are in a private block and are available for persons of moderate means. At Felixstowe, the seaside resort twelve miles distant, the hospital has its branch institution, the Bartlet Convalescent Home. This home has been built, equipped, and is maintained as a branch hospital, the great majority of the cases transferred there being stretcher cases. The work of the hospital, which is largely surgical, is carried on in modern wards. The hospital reached its centenary last year, but no part of the building erected one hundred years ago is now used for the accommodation of patients. The older part of the hospital has been modernised, but the greater part of the institution consists of entirely new accommodation erected during the past quarter of a century. In addition to the general medical and surgical wards, there is a special block for ear, nose, and throat cases comprising 36 beds and complete with its own theatre unit; an ophthalmic department for male and female wards and special operating theatre; a children's wing with balcony wards; gynæcological wards; urogenital wards; an isolation block; and a large accident ward principally for motor accident cases.

The out-patient department has been enlarged and remodelled at a cost of £17,000; a pathological building was recently erected at a cost of £12,000. A new block specially designed for the orthopædic department and fracture clinic is in course of construction, and an orthopædic surgeon has been appointed. The nursing staff comprises 165—sisters, staff nurses, and the probationers who are trained in this centre. The pharmacy is recognised by the Pharmaceutical Society for Great Britain for practical training. The resident medical staff consists of a resident medical officer who is also medical superintendent of the branch establishment, a casualty officer, house physician, and five house surgeons. The hospital is recognised by the Council of the Royal College of Surgeons so far as posts of first and second house surgeons are concerned (also for the D.L.O. and the D.O.M.S.). The meetings of the Clinical Society and also the meetings of the South Suffolk division are held at this hospital, a close touch being maintained between the members of those associations and the medical staff of the institution.

Surrey Royal County Hospital, Guildford

This hospital, established in 1866, has recently been enlarged and thoroughly modernised and with the further additions which are now being made will have accommodation for 220 patients, including a paying ward of 22 beds. It has a ward for children, a special operating block with two theatres, anæsthetic sterilising and pathological rooms; a large out-patient and casualty department; a fully equipped X ray department and special departments for massage and light treatment. There is a separate pathological block in which every form of investigation necessary for diagnosis and treatment is carried out. There are special departments for orthopædics, diseases of women, of the skin, of the eyes, of the ears, nose, and throat, of the teeth, and of the nervous system, each being under the charge of a consultant, and in addition there is an Honorary Visiting Staff of four Physicians and four Surgeons as well as five Resident Medical Officers. A resident post at the hospital is recognised as qualifying for admission to the final examination for the F.R.C.S., and the hospital is also a training school for nurses. In the year 1935 the number of in-patients was 3007 and of out-patient attendances, 33,382.

Sussex Royal County Hospital, Brighton

This general voluntary hospital has 272 beds and possesses a large out-patient department, including Dental, Dermatological, Ear, Nose, and Throat, X Ray, and Electrotherapeutic sections, and a well-appointed clinical research and bacteriological department. The hospital does not take resident pupils, but out-pupils may attend the practice of the hospital on payment in advance of such fees as may be arranged.

Wolverhampton—The Royal Hospital

There are 300 beds. Special departments: Children, Gynæcology, Maternity, Ear, Throat, and Nose Diseases, Electrotherapeutic and X Rays, Orthopædics, Artificial Sunlight, Venereal Disease, Pathological and Biochemical Laboratories, Dentistry, Radium, Skin Diseases, Psychiatric Clinic, and Electrocardiograph. There is an excellent medical library. The hospital is a regional centre for radium therapy. The Resident Staff consists of Resident Assistant Surgeon, Resident Assistant Pathologist, one House Physician, and five House Surgeons; Women's Department, one Resident Obstetric Officer and one House Surgeon. Pupils are allowed to witness the whole of the practice of the hospital and to be present at operations, and have every opportunity of acquiring a practical knowledge of their profession. The hospital is recognised by the various Examining Bodies for a part of the requisite attendance on Medical and Surgical Practice. A course of Practical Pharmacy is given by the Pharmacist. Fees on application.

Worcester Royal Infirmary

The hospital has 165 beds. An obstetric department and side wards were opened in 1934 and increased the bed accommodation by 16. In 1932 a new wing was added consisting of two operating theatres and a complementary suite of rooms, an Orthopædic and Electro-massage Department, a Pathological Laboratory, an Ear, Nose, and Throat Ward, a Mortuary, Post-mortem Room, Viewing Chapel, and Inquest Room. A new Nurses' Home was also opened in 1932, providing accommodation for Matron, 10 Sisters, and 50 Nurses. The Resident Medical Staff has been increased to four, and a house in the infirmary grounds has been furnished and equipped for them. There is a Department for Venereal Diseases, and Surgical Tuberculosis cases are treated. There is also a Mental Out-patient Clinic and a Clinic of Psychological Medicine.

York County Hospital

This hospital at York contains 200 beds. There are balconies for outdoor treatment, an X Ray Department, Orthopædic, Dental, Electrotherapeutic and Massage Departments, actinotherapy installation, and clinical laboratories. There are clinics for Children, Heart Cases, Functional Nervous Disorders, Dermatological Disorders, Venereal Diseases, and Electrocardiography.

EXAMINING BODIES AND SCHOOLS IN SCOTLAND

UNIVERSITY OF ABERDEEN

THE University of Aberdeen grants four degrees in Medicine and Surgery—viz , *M.D* , *Ch M* , *M B* , and *Ch B* The Degree of Doctor of Philosophy (*Ph D*) is also granted in the Faculty of Medicine

Degrees of M.B and Ch B—Candidates, before entering on the curriculum, must have passed the Preliminary Examination or hold a qualification recognised as exempting from such examination

The curriculum for the degrees extends over a period of five years, during which attendance is required in the following subjects Biology, Physics, Chemistry (Systematic and Practical), Anatomy (Systematic and Practical), Physiology (Systematic and Practical), Materia Medica and Therapeutics, Practical Pharmacy, Pathology (Systematic and Practical), Forensic Medicine, Public Health, Surgery, Medicine, and Midwifery

Candidates must attend for at least three years the medical and surgical practice of a recognised hospital, they must have attended courses of at least nine months in clinical medicine and clinical surgery, and have acted as clerk in the medical and dresser in the surgical wards of a hospital Attendance is required on the practice of a dispensary or the out-practice of a hospital and also on courses in Mental Diseases, Fevers, Ophthalmology, Post-mortem Examinations, Venereal Diseases, Tuberculosis, Radiology, X Ray Therapeutics and Electrical Treatment, and Clinical Chemistry, and other special subjects The candidate is also required to have been properly instructed in Vaccination and to have attended at least 20 Midwifery cases

Degrees of M.D and Ch M—Candidates for either of these degrees must already hold the degrees of M.B and Ch.B of Aberdeen. A Thesis (in duplicate) has to be presented and an examination has to be passed in Clinical Medicine (or in some special Department of Medical Science) or Clinical Surgery, as the case may be.

Degree of Ph D—For this degree candidates must pursue a course of special study or research during a period of nine academical terms as Research Students in the University of Aberdeen or in any College or Institution that may be affiliated thereto A Thesis (in duplicate) must be presented for approval.

A Diploma in Public Health is granted by the University to graduates in Medicine of a University in the United Kingdom, after a special examination

Scholarships and Prizes—In the Faculty of Medicine of the University of Aberdeen there are the following Bursaries, Scholarships, and Prizes —Bursaries: about 90 Bursaries (competition and presentation) ranging in value from £10 to £45 per annum, most of them being tenable from three to five years Scholarships five Post-graduate Scholarships, ranging in value up to £250 per annum Numerous Prizes and Gold Medals reward proficiency in special departments

Clinical Studies are carried on mainly at the ABERDEEN ROYAL INFIRMARY There are 600 beds The main clinical work of the students is done in the infirmary with its general and special facilities, including a department of clinical chemistry A dietetic department has recently been established under the direction of a qualified dietitian A post-graduate course in medicine is given during the summer term

The ABERDEEN ROYAL MENTAL HOSPITAL contains about 900 beds, and a class of mental diseases meets at the University of Aberdeen, and clinical instruction is given at the hospital

Students also receive clinical instruction at the following institutions City Fever Hospital, Sick Children's Hospital, General Dispensary, Lying-in and Vaccine Institutions, and the Ophthalmic Institution

UNIVERSITY OF EDINBURGH

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh—viz, *M.B*, *Ch.B* , *M.D* , and *Ch M* The degree of *Ch.B* shall not be conferred on any person who does not at the same time obtain the degree of *M B* , and the degree of *M.B* shall not be conferred on any person who does not at the same time obtain the degree of *Ch.B* No one is admitted to the degrees who has not been engaged in study for five years

Candidates for the degrees of M.B and Ch.B must have attended for at least three academic years the medical and surgical practice either of the Royal Infirmary, Edinburgh, or of a general hospital elsewhere which accommodates not fewer than 80 patients and possesses a distinct staff of physicians and surgeons They must have attended courses of instruction in Clinical Surgery and Clinical Medicine each of nine months, and courses of instruction in all the subsidiary subjects They must have attended a course in Clinical and Practical Midwifery and have personally conducted at least 12 cases of labour Residence for a period of at least eight weeks in a hostel in close proximity to the Maternity Hospital is also required.

With respect to the places and institutions at which the studies of the candidates may be prosecuted the following regulations have effect Three of the five years of medical study must be spent in the University of Edinburgh. The remaining two years may be spent in any University of the United Kingdom, or in any Indian, Colonial, or Foreign University or medical school recognised for the purpose by the University Court Women are admitted to graduation in medicine under the same conditions as men

Bachelors of Medicine and *Bachelors of Surgery* of not less than 24 years of age may proceed to the degrees of *Doctor of Medicine* and *Master of Surgery* after they have spent one year in the medical or surgical wards respectively of a hospital, or the Military or Naval Medical Services, or in scientific work bearing directly on their profession, or two years in practice In each case an examination must be passed and a thesis submitted for approval

Post graduate Instruction—In the Departments of the Faculty of Medicine provision is made for research by students of graduate standing In the University laboratories facilities will be provided for approved candidates for the degree of Ph D In connexion with the University and Royal Colleges post-graduate instruction is given during each of the three terms of the academic year as well as the summer vacation In addition to a four week's General Surgical Course and a General Practitioners' Course of similar duration in August-September special courses in Obstetrics and Gynæcology, Internal Medicine, Diseases of Blood, Endocrinology, Diseases of Nervous System, Urology, Ultra-violet Radiations, Interpretation and Significance of Modern Diagnostic Methods, Clinical Surgery, Surgical Pathology, Orthopædics, &c, may be given at various periods of the year Particulars of these and other courses may be had on application to the Honorary Secretary, Post-graduate Courses in Medicine Graduates may, if desired, attend the General Surgical Course or the General Practitioners' Course for a period of two weeks at a reduced fee The University of Edinburgh is especially rich in Scholarships and Prizes in medical subjects Full particulars concerning these, as well as concerning the fees at different stages, can be obtained from the Dean of the Medical Faculty

Edinburgh Royal Infirmary

Clinical instruction is carried on mainly at this institution There are 1135 beds, including 71 cots for children. Courses of Clinical Medicine and

Surgery are given by the physicians and surgeons to male and female students. Special instruction is given on Diseases of Women Diseases of the Skin Diseases of the Eye Ear, Nose and Throat, and the Teeth Separate wards are devoted to Venereal Diseases, *Diseases of Women Diseases of the Eye* the Ear Throat and Nose the Skin and Orthopædics, and also to cases of Incidental Delirium or Insanity There is also a large and complete Radiological Department in which is given theoretical and practical instruction for the University Diploma in Radiology &c In addition to the Out-patient *Departments* connected with the Surgical and Medical Houses, there are separate Out-patient rooms attached to the Special Departments. Post-mortem examinations are conducted in the anatomical theatre by the pathologist and his assistants, who also give practical instruction in Pathological Anatomy and Histology

The appointments are: 1 Resident physicians and surgeons are appointed and live in the house free of charge The appointment is for six months, but may be renewed at the end of that period by special recommendation. 2 Non resident house physicians and surgeons and clinical assistants are appointed for six months. The appointment may be renewed for a like period by special recommendation. 3 Clerks and dressers are appointed by the physicians and surgeons These appointments are open to all students and junior practitioners holding hospital tickets. 4 Assistants in the Pathological Department

Among other institutions in which students receive clinical *instruction are the following*:—

Municipal Hospitals—The three Municipal Hospitals—the Western General Hospital (300 beds) the Eastern General Hospital (400 beds) and the Northern General Hospital (200 beds)—are available for clinical instruction in Medicine Surgery, Midwifery and Diseases of Children throughout each term and during vacation Accommodation is provided for resident students who act as clinical assistants, and the experience gained by such residence has proved to be a useful addition to the ordinary clinical classes and of great value to the student.

Edinburgh Royal Hospital for Sick Children

This hospital, which is situated within easy distance of the University and the Royal Infirmary contains about 182 cots, of which 50 are reserved for surgical cases and 12 for ear and throat cases It is fitted with every modern improvement and has a fully equipped out-patient department for both medical and surgical cases Clinical instruction is given in the hospital by the professor of child life and health and the university lecturers in diseases of children The course which includes lectures and clinical teaching covers the care and management of the child in health as well as the medical and surgical aspects of disease in children

Edinburgh Royal Hospital for Mental Disorders

The 850 beds in this hospital are available for the clinical instruction of members of the university class of psychiatry Clinical lectures on the chief forms of Mental Disease and Defect are given in the hospital and at the Jordanburn Nerve Hospital and the Gogarburn Certified Institution, Corstorphine, Edinburgh. A mental out-patient clinic is also conducted at the Royal Infirmary and students have the opportunity of coming into personal contact with and examining cases. There are resident physicianships and unqualified clinical clerkships in the hospital and a well-equipped laboratory under a bacteriologist is available for the prosecution of clinical research by those holding these appointments.

Edinburgh City Hospital

This hospital has 600 beds for infectious diseases. Clinical instruction which is largely given at the bedside is carried out by the university lecturer who is also medical superintendent of the hospital during each of the three terms of the academic year In the course special attention is directed to methods of individual immunisation and prophylaxis, and to the correlation of bacteriological and immunological *findings with clinical and* other manifestations of infectious disease Students attend the course in their fourth year after having passed the third *professional and attended courses* in clinical medicine and clinical surgery

Edinburgh Royal Maternity Hospital

The hospital is situated close to the Royal Infirmary and the University Medical School. Here Midwifery is studied clinically, instruction being given by the professor of midwifery and the other physicians and assistant physicians who are university lecturers on clinical obstetrics In addition to clinics and demonstrations members of the class are expected to follow all the work of the hospital, including the antenatal department. Before he can qualify for a certificate in the subject each student must reside for a period of at least five weeks in a University Hostel close to the hospital so that he can obtain full advantage of practical instruction on abnormal cases

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UNIVERSITY OF GLASGOW

The University of Glasgow is both a teaching and a degree-granting body but admits to graduation only candidates whose preliminary examination and course of study conform to its own regulations Within certain limits instruction given by recognised medical schools and *teachers may be accepted but not less* than one-half of the subjects other than clinical must be taken in this or some other recognised university and at least *two years of the course must be taken in* Glasgow University Seven degrees, open both to men and women are conferred: *M.B* and *Ch.B* (always conjointly) *M.D and Ch.M* *B.Sc* in Public Health; *D.Sc* in Public Health *B Sc.* in Pharmacy; and *Ph.D* in the Faculty of Medicine. A Diploma in Public Health (*D.P.H*) is *also granted*

All information as regards the extent and standard of the Preliminary Examination may be obtained by application *to the Secretary* Scottish Universities Entrance Board 81 North-street, St. Andrews

For the degrees of M B and Ch.B a curriculum of five years is required The candidate must attend a course or courses of instruction in each of the following subjects of study extending over not less than the number of terms specified in each case, and including such class examinations as may be prescribed in connexion with the several courses: Chemistry (including Organic Chemistry) with Practical Chemistry three terms; Physics (with practical work), one term Botany (with practical work) one term; Zoology (with practical work) one term; Anatomy and Practical Anatomy five terms Physiology and Practical Physiology, three terms; Materia Medica and Therapeutics (together or separately) each subject, one term Pathology and Practical Pathology three terms Medical Jurisprudence and Public Health (together or separately) each subject, one term; Midwifery and Diseases peculiar to Women and to Infants two terms, Surgery two terms Medicine, two terms. Candidates must attend for at least three years the Medical and Surgical Practice of a recognised hospital accommodating at least 80 patients and having a distinct staff of physicians and surgeons At least nine months hospital attendance is required on both Clinical Surgery and Clinical Medicine with nine months more of general hospital practice; the student must have acted for six months as *clerk* in medical and dresser in surgical wards, and must have had six months outdoor practice; he must also have attended a course of Mental Diseases and *of* Practical Pharmacy (25 meetings) must have been properly instructed in Vaccination at a public vaccination station, and must have attended at least 20 cases of labour and the Practice of a Lying in Hospital The University also requires further study in various special subjects Ophthalmology, Diseases of the Ear, Throat, and Nose, Venereal Diseases, Tuberculosis, Fevers, Vaccination The final year consists of three intensive terms of study one devoted to Midwifery, Diseases of Women, and Pædiatrics, one to Surgery, and one to Medicine During one of the two latter terms a practical course in Clinical Pathology must be taken.

There are four Professional Examinations, the first comprising Botany, Zoology, Physics, and Chemistry, the second comprising Anatomy and Physiology, the third comprising Materia Medica and Therapeutics and Pathology, and the fourth or final, comprising Medical Jurisprudence and Public Health, Surgery and Clinical Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and the Diseases peculiar to Women and to Infants

The degrees of M.D (Doctor of Medicine) and Ch M (Master of Surgery) are granted to candidates, not under 24 years of age, who have previously obtained the double bachelorship, on submitting an approved thesis and completing examinations in Clinical Medicine for M.D, and in Surgical Anatomy, operations on the dead body, and Clinical Surgery for Ch M The degree of Doctor of Philosophy (Ph D) is also conferred in the Faculty of Medicine Candidates must already have obtained a degree (or equivalent diploma) from an approved University or College, and must prosecute a course of special study or research for two or three years and give evidence of satisfactory progress A thesis must be presented for approval by the Senate on the recommendation of a Special Committee The candidate may be required to undergo an oral or other examination on the subject matter of the thesis

Post graduate Medical Teaching is available under the auspices of Glasgow Post-Graduate Medical Association, which is representative of practically all the Teaching Institutions in Glasgow Weekly demonstrations for practitioners are given throughout the winter and spring, and comprehensive courses of instruction during the summer and autumn There is a General Medical and Surgical Course during the last two weeks of August and the first two weeks of September This is a whole-time course and includes most of the subjects of interest to the general practitioner Arrangements have been made whereby a limited number of graduates may become attached to wards or out-patient departments nominally as clinical assistants for definite periods throughout the year

There are many Bursaries, Scholarships, and Prizes in connexion with the Medical Course

Anderson College of Medicine

Courses are given at Dumbarton-road, Glasgow, W, which qualify for all the licensing boards and for the Universities of Oxford, Cambridge, London, Edinburgh, and Glasgow (the latter two under certain conditions). Extensive accommodation is provided for practical anatomy, chemistry, botany, zoology, physiology, pharmacy, and operative surgery Women students are admitted on the same terms as men, and the Carnegie Trust extends its benefactions to students of the College Candidates for the L.D S can obtain the full medical curriculum, *the courses* special to dentistry are conducted at the Dental Hospital, Glasgow

Clinical Studies are carried on at the GLASGOW ROYAL INFIRMARY, the GLASGOW WESTERN INFIRMARY, the VICTORIA INFIRMARY, and other general hospitals in the city Facilities for the study of special branches are afforded by the Royal Hospital for Sick Children, the Royal Mental Hospital, Hawkshead Asylum, the City Fever Hospitals, the Royal Maternity Hospital the Samaritan Hospital, the Eye Infirmary, and the Bridge of Weir Sanatorium

The following are additional centres of instruction:—

Glasgow Western Infirmary

This hospital of 650 beds adjoins the University Special wards are set apart for diseases of women, throat, nose, and ear, and for affections of the skin In the out-patient department there are special clinics for diseases of women and for diseases of the throat, ear, nose, teeth, skin, venereal disease, and electro therapeutics. This is one of the radium centres for Glasgow and the West of Scotland The clinical courses are given by the physicians and surgeons, each of whom conducts a separate class, and students require to enter their names at the beginning of the session for the class which they propose to attend Special instruction is given to junior students by tutors or assistants, and clinical clerks and dressers are selected from the members of the class In the pathological and bacteriological departments the courses are both systematic and practical, and extend through the winter and following summer, these are likewise recognised by the University for graduation In addition post-graduate courses are held Eighteen resident assistants are appointed annually from those who have completed their course In the Clinical Laboratory students receive laboratory instruction from the lecturer on clinical methods A new Ophthalmological Department has been erected where special courses will be held

Glasgow Royal Infirmary

Glasgow Royal Infirmary is the oldest and largest voluntary hospital in Glasgow It is situated in the east-end of the city, adjacent to St Mungo's Medical College, and contains nominally 794 beds, although the daily average number of patients resident in the Infirmary during 1936 was 849 It is a general hospital with 22 wards devoted to general surgery and 10 wards to medicine The special departments include wards for the treatment of burns, diseases of the ear, nose, and throat, skin diseases, diseases peculiar to women, urological diseases There are also wards for metabolic examinations and treatment by oxygen therapy The medical electrical department contains the latest plant, and treatment by electricity, light, &c, and electrocardiographic examinations are also carried out here The infirmary is a national radium centre, and has both national radium and radium belonging to itself for the treatment of cases of malignant disease and such other conditions as demand radiation The orthopædic department includes a large massage department and school of massage for male students There are also vaccination, dental, dietetic, and nervous and mental diseases clinics, although beds are not provided for the special use of these clinics The pathological institute comprises a large pathological block, bacteriological and biochemical departments, and a fully stocked pathological museum

The Royal Infirmary is a large teaching hospital, recognised by the University of Glasgow and the Royal Faculty of Physicians and Surgeons of Glasgow The teaching staff includes four professors—namely, *of surgery, medicine, pathology,* and diseases of women—who hold chairs in the University of Glasgow, nine lecturers appointed by the University, four honorary clinical lecturers in clinical medicine, five honorary clinical lecturers in clinical surgery (*all* appointed by the University), and numerous assistants to various departments There are also Hall Fellows specially appointed, who act as clinical tutors *Full* facilities are given to medical students for instruction in systematic and clinical medicine and surgery, pathology, diseases of women, laryngology, rhinology, otology, &c There is a very large *out-patient* department, where there are nearly half a million attendances of patients annually, and facilities are given to students for instruction in the various outpatient clinics and departments The *ophthalmic* work is carried on at the *Ophthalmic Institution,* containing 36 beds (the institution being under the management of the infirmary) Facilities are given for medical students to work here and classes are held qualifying students in ophthalmology required by the curriculum for the final examinations. Post-graduate classes are also conducted at the Infirmary and the Institution and post-graduate clinical assistantships are available for a limited number of students.

Sixteen resident surgeons and physicians, who must be registered medical practitioners are appointed by the managers of the infirmary every six months, and 15 non resident surgeons and physicians are also appointed for the same period Further appointments in special diseases are open to these resident and non resident physicians and surgeons.

St. Mungo's College

The classes in St. Mungo's College (vide Glasgow Royal Infirmary) qualify for the medical and dental qualifications of the English, Scotch and Irish Conjoint Boards, and under certain conditions, for the various universities, including the University of London Students who have fulfilled the conditions of the Carnegie Trust are eligible for the benefits of this Trust during the whole course of their studies at St. Mungo's College. Further particulars can be obtained from the secretary of the medical faculty

Victoria Infirmary

This institution, situated at Langside and having its office at 40 St. Vincent-place, Glasgow has 495 beds, and is the third of the extensive general hospitals in Glasgow to afford opportunity for clinical instruction to students In addition to a full general staff there is a clinical research laboratory with pathologists and bacteriologists attached radiological instructor and a full staff of specialists The Bellahouston Dispensary also with a clinical staff is conducted in connexion with the Victoria Infirmary The Paying Patients Wing has been extended and now has accommodation for 80 patients.

Royal Hospital for Sick Children Glasgow

This institution consists of: (1) a hospital at Yorkhill containing 275 cots, built on an elevated and central site close to the University (2) an out-patient department in West Graham-street and (3) a country branch at Drumchapel, Dumbartonshire containing 80 cots There are one professorship and four lectureships in the University of Glasgow in connexion with the hospital one professorship and one lectureship on the medical diseases of infancy and childhood one lectureship on surgery and orthopædics in relation to infancy and childhood one lectureship on biochemistry in relation to infancy and childhood and one research lectureship on the pathology of the diseases of infancy and childhood The lectures are both systematic and clinical but particularly and chiefly the latter In addition, special facilities are given for post-graduate study Resident house physicians and surgeons are appointed every six months in April and October

Glasgow Royal Maternity and Women's Hospital

The average number of patients in the hospital at Rottenrow is 166 There are also over 4000 mothers attended per annum in their own homes. The work of the antenatal wards with their 50 beds is supplemented by large antenatal clinics where over 5000 new patients are seen in the course of the year Well-equipped research laboratories were opened in 1926 A full time Director of Research has been appointed. A pædiatrician gives daily attendance and the practice of the hospital affords a good field for post-graduate study

Glasgow Royal Samaritan Hospital for Women

The hospital has 190 beds of which 30 are for paying patients, and offers excellent facilities for clinical instruction in the diseases peculiar to women A Radiological Department with the most modern apparatus for treatment was recently opened Lectures and clinical demonstrations are given by members of the surgical staff There is a complete course each University term for University students and one course in the summer term for College students A post-graduate course is held during the summer months and a series of demonstrations for general practitioners is carried out in the winter The hospital is represented on the Board of the Glasgow Post-Graduate Medical Association formed for coördinating post-graduate medical teaching The Royal Samaritan Lectureship in Gynæcology is a University Lectureship associated with the hospital.

Glasgow Lock Hospital

The hospital at 41, Rottenrow Glasgow founded in 1807 contains 84 beds and 16 cots for the treatment of females suffering from Venereal Diseases. There is also a Labour Ward and a well-equipped Dispensary for out-patient attendances. There is a bacteriological laboratory equipped with modern appliances, where continuous research work is done. Large University classes are held on the subject of female venereal disease Post-graduate classes are also held. Recently the hospital has been completely renovated and modernised.

Glasgow Eye Infirmary

The wards and dispensary at Berkeley-street and Charlotte-street are recognised by the University for the purpose of instruction in ophthalmology for graduation in medicine at the University A venereal centre has been established and a branch dispensary has been opened in Clydebank. Post-graduate classes are held

Glasgow Ear, Nose and Throat Hospital

The hospital contains 58 beds At out-patient and indoor departments at 306 St. Vincent-street clinical instruction is given. A research department has been installed and post-graduate courses are held during the year Recognised by the University as a teaching school in Diseases of the Throat, Nose and Ear A further extension of 20 beds is being contemplated A new lecture hall is being built which will be fully equipped for teaching and there will be special rooms for endoscopy

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UNIVERSITY OF ST ANDREWS

Four degrees in medicine and surgery are conferred by the University of St Andrews (United College St Andrews, and University College, Dundee)—viz *M.B Ch.B M.D Ch.M* other qualifications are diploma in public health, diploma in dental surgery (*L.D.S*) a degree in dental surgery (*B.D.S*) a higher qualification as master of dental surgery (*M.D.S*) and a diploma in public dentistry (*D.P.D*)

The extent and standard of the Preliminary Examination is determined by the Scottish Universities Entrance Board, constituted under Ordinance No 70 of the Scottish University Courts (General No 3—*Regulations as to Admission* to the Scottish Universities for purposes of graduation) in accordance with the terms of that Ordinance A degree in Arts or in Science in any of the Universities of the United Kingdom and in some colonial and foreign universities exempts The Preliminary Examination for graduation in Medicine and Surgery Arts or Science of the University of St Andrews is accepted as equivalent to the Registration Examination required by the General Medical Council (the certificate to include the required subjects) Also the Final Examination for a degree in Arts or Science

Degrees of Bachelor of Medicine and Bachelor of Surgery—Candidates must have been engaged in medical study for at least five years In each of the first four years the candidate must have attended at least two courses of instruction in one or more of the subjects of study specified below each course extending over a session of not less than five months, either continuous or divided into two terms or alterna tively, one such course along with two courses, each extending over a session of not less than two and a half months During the fifth or final year the candidate shall be engaged in clinical study for at least nine months at the infirmary of Dundee or at one or more of such public hospitals or dispensaries, British or foreign, as may be recognised for the purpose by the University Court The candidate must have received instruction in each of the following subjects of study, including such examinations as may be prescribed in the various classes—viz, Anatomy, Practical Anatomy, Chemistry, Materia Medica, Physiology, Practice of Medicine, Surgery, Midwifery and the Diseases peculiar to Women and Infants, Pathology, Bacteriology, Practical Chemistry, Physics, Botany, Zoology, Practical Physiology, Practical Pathology, Forensic Medicine, and Public Health The candidate must have attended for at least three years the Medical and Surgical Practice either of the Infirmary of Dundee or of a General Hospital elsewhere with not fewer than 80 patients, with a distinct staff of physicians and surgeons, and recognised for the purpose by the University Court Additional subjects of study are Practical Pharmacy, Mental Diseases, Practical Midwifery, Operative Surgery, Vaccination, Children's Diseases, Fevers, Ophthalmology, Diseases of the Ear, Throat, and Nose, Anæsthetics, Dermatology, Venereal Diseases, Tuberculosis, and Post mortem Examinations

With respect to the places and institutions at which the studies of the candidate may be prosecuted the following regulations shall have effect 1 Two of the five years of medical study must be spent in the University of St Andrews 2 The remaining three years may be spent in any University of the United Kingdom or in any Indian, Colonial, or Foreign University recognised for the purpose by the University Court, or in such medical schools or under such teachers as may be recognised for the purpose by the University Court Women are admitted to graduation in Medicine

Part or whole of the medical curriculum of St Andrews University must be taken at *University College, Dundee* Provision is made by St Andrews University for instruction in the work of the first two years, including Anatomy and Physiology, in both St Andrews and Dundee The last three years of the curriculum must be taken in Dundee in the medical school

Professional Examinations for the Degrees of Bachelor of Medicine and Bachelor of Surgery —Each candidate will be examined both in writing and orally, and also clinically where the nature of the subject admits, in the following divisions—viz, first, in Botany, Zoology, Physics, and Chemistry, second, in Anatomy and Physiology, third, in Materia Medica, Pathology and Bacteriology, Forensic Medicine and Public Health, and fourth, in Surgery, Clinical and Operative Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and Gynæcology (Systematic and Clinical)

Dundee Royal Infirmary

This institution has 450 beds In addition to the ordinary Medical and Surgical Wards, there are special departments for Midwifery (In- and Out-door), for Diseases of Women, of Children, of the Eye, of the Ear, Nose, and Throat, and of the Skin, and for Pathology, Radiology, Electrotherapeusis, and Electrocardiography The out-patient department has recently been reconstructed and enlarged Clinical teaching is given to students by the Honorary Staff, post-mortem examinations are conducted by the Pathologist All courses of instruction are recognised by the University of St Andrews and the other Universities and Board of the United Kingdom Eleven Resident Medical Officers are appointed every six months Clinical clerks and dressers are attached to the Physicians and Surgeons Post-graduate classes dealing with General Medicine and Surgery, Midwifery, and other Special branches are held in May and June

SCOTTISH MEDICAL CORPORATIONS GRANTING DIPLOMAS

CONJOINT EXAMINING BOARD

The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow have made arrangements by which, after one series of examinations, held in Edinburgh or Glasgow, or both, the student may obtain the diplomas of the three bodies This is the Scottish Conjoint Board The three bodies grant their Single Licences only to candidates who already possess legal qualifications in Medicine or Surgery

The hospitals which are recognised by the Scottish Conjoint Board as places where professional study for their diplomas can be pursued are all those institutions which feed the medical faculties of the universities, as well as all the places which are recognised by the English and Irish Conjoint Boards

Professional Education —The candidate must produce certificates or other satisfactory evidence of having attended the following separate and distinct courses of instruction Physics 1 term, Elementary Biology, 2 terms, Elementary Inorganic and Organic Chemistry, 2 terms, Anatomy Lectures, 2 terms, *Practical Anatomy*, 5 *terms*, *Physiology Lectures*, 2 terms, Practical Physiology (including Histology, Biochemistry, and Biophysics), 3 terms, *Materia Medica and Practical Pharmacy*, 2 *terms*, Pathology (including Practical Pathology), 3 terms, Practice of Medicine, 2 terms, Clinical Medicine, 3 terms, Principles and Practice of Surgery, 2 terms, Clinical Surgery, 3 terms, Midwifery and Gynæcology, 2 terms, Diseases of Children, 1 term, Medical Jurisprudence, 1 term, and Public Health, 1 term The certified attendance on lectures, demonstrations, and practical work must not be less than three-fourths of the total number of roll-calls Every student undergoes a course of Practical Midwifery, but before attending at labours he is required to attend a course of lectures on Surgery and Midwifery and to hold the offices of Clinical Medical Clerk and Surgical Dresser

The student must attend for 27 months the Medical and Surgical practice of a public general hospital containing on an average at least 80 patients available for clinical instruction and possessing distinct staffs of physicians and of surgeons He must act as Surgical Dresser and Medical Clinical Clerk for not less than nine months in the wards in each case, and receive practical instruction in administration of anæsthetics He must attend for three months the practice of a public dispensary especially recognised by any of the above authorities, and three months' attendance at the out-patient department of a recognised general hospital This attendance should be made after the student has passed the First and Second Examinations

Candidates are also required to attend the following three monthly courses Diseases and Injuries of the Eye, Insanity, Infectious Diseases, Gynæcology, Tuberculosis, Diseases of the Skin, Diseases of the Ear, Nose, and Throat, Radiology, Orthopædics, Diseases of Children The curriculum lasts for five years, the fifth year being devoted to clinical work.

There are four professional examinations —

First Examination includes Systematic and Practical Biology, Chemistry, and Physics

The Second Examination must be Written, Practical, and Oral, and consist of the following subjects (1) Anatomy and Embryology, and (2) Physiology, including Histology (if not included in Anatomy), Biochemistry, and Biophysics Candidates may be admitted to this Examination on production of the necessary certificates of curriculum.

The *Third Examination* must be Written, Practical and Oral and consist of the following subjects: (1) Pathology including Bacteriology and Morbid Anatomy and (2) Pharmacology (Theoretical and Practical), including Pharmacological Chemistry the Principles of Therapeutics, and Prescription Writing Candidates may be admitted to this Examination on production of the necessary certificates of curriculum

The *Final Examination* must consist of the following subjects[1]: (1) Medicine including Therapeutics, Applied Anatomy and Physiology, and Clinical Pathology with Practical Medicine; (2) Surgery, including applied Anatomy and Physiology Clinical Pathology with Practical Surgery; (3) Midwifery and Diseases of Women, Clinical Obstetrics and Gynæcology with Practical Midwifery and (4) Medical Jurisprudence and Public Health Medicine Surgery and Midwifery must be taken together and Medical Jurisprudence and Public Health and not earlier than on the conclusion of five Winters and five Summers of Medical Study provided that a period of 33 months has elapsed since passing the Second Professional Examination The Schedule for the Final Examination must contain a summary of the entire Course of Study and properly attested or proved by Certificates, must be lodged with the Inspector and the fee paid not later than two weeks before the examination At the same time there must be produced a Certificate to show that the Candidate is not less than 21 years of age No Candidate can be exempted from examination on any subject of the Final Examination unless he has already passed in the subject at this Board.

In addition to the Written and Oral Examinations all Candidates must be subjected to Clinical Examinations in Medicine Surgery and Midwifery and Gynæcology which shall include the Examination of Patients, Physical Diagnosis the Clinical use of the Microscope and of other instruments, Clinical Chemistry Surgical Appliances, Bandaging Surface markings, Skiagrams, &c. The Oral Examination includes the recognition of specimens. All Candidates for the Final Examination must complete the three portions (Medicine, Surgery and Midwifery) within a period of 10 months

There are four periods of examination annually

The Registrar in Edinburgh is Mr David Thomson, 18 Nicolson-street; and the Registrar in Glasgow Mr David Willox 242 St. Vincent-street to whom fees and certificates must be sent for the respective examinations and from whom particulars of fees can be obtained

School of Medicine of the Royal Colleges Edinburgh

The Lectures in this School qualify for graduation at Edinburgh and other Universities for the Examinations of the Conjoint Boards of Edinburgh and Glasgow London and Dublin. The number of students attending varies from year to year and in recent years the average number has been about 700 In accordance with the Regulations of the University of Edinburgh one-half of the qualifying classes required for graduation there may be attended in this School the fees paid for such classes being the same as those for the corresponding University classes. Special classes of instruction for Dental students are conducted in the School. Post-graduate courses are conducted in conjunction with the University Further particulars regarding the School also its calendar (price 1s including postage), may be had on application to the Dean of the School, Surgeons Hall Edinburgh.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

In addition to the Diplomas granted by the Scottish Conjoint Board the Royal College of Physicians grants its Single Licence to candidates whose names are already on the Medical Register

The Royal College of Physicians of Edinburgh grants a *Membership* and a *Fellowship*

Membership—A candidate who must be a Licentiate of a British or Irish College of Physicians or a graduate in medicine of a University, approved by the Council and 24 years of age, is examined in medicine, therapeutics and in any branch of the departments of medicine specially professed such as general pathology psychology public health obstetrics, gynæcology diseases of children, tropical medicine or medical jurisprudence

Fellowship—The Fellows are selected from the ranks of the *Members*

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

The Royal College of Surgeons of Edinburgh admits to the examination for its Single Licence any candidates who hold a Diploma in Medicine of any British Indian, or Foreign university or of any British College of Physicians or of the Society of Apothecaries of London or Apothecaries Hall Dublin granted under the provisions of the Medical Act, 1886 whose preliminary examination and course of professional study is proved to be sufficient to fulfil the requirements of the College or to those who have passed a full examination for any of the above. Female practitioners are admitted to the Licence of the College and also to the Fellowship, and the regulations apply to practitioners of either sex.

The College grants a diploma of Fellowship after examination to the holders of British surgical degrees or diplomas and the holders of recognised degrees of the Universities of Canada Australia New Zealand and India

The Fellowship—Candidates must be 25 years of age and in practice for at least two years The examination is written and viva voce and includes surgery and surgical anatomy operative surgery and clinical practice One optional subject must also be taken the range of these specialisms covering nearly every branch of medicine. Candidates are not allowed to appear for more than three times at the examinations, unless by permission of the President's Council. Three weeks notice of intention to appear for examination must be given by the candidate to the College

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

The Royal Faculty of Physicians and Surgeons grants, after examination, a Fellowship which is registrable by the General Medical Council as an additional qualification. For the Fellowship qua physician or the Fellowship qua surgeon, the candidate must pass in medicine or surgery as the primary subject and an additional subject cognate with medicine or surgery respectively must also be taken at the same examination. Candidates are required to be approved by the Council before admission to the examination. Successful candidates are later balloted for election by the Faculty and if elected are duly admitted qua physician or qua surgeon. Examinations are held quarterly The regulations respecting the Fellowship together with the dates of the examinations may be obtained on application to the secretary Royal Faculty of Physicians and Surgeons, 242 St Vincent street, Glasgow C.2

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[1] Candidates at the Final Examination may be examined on Diseases of Children, Fevers Tuberculosis, Insanity Skin Diseases, Diseases and Injuries of the Eye Diseases of the Ear Throat, and Nose, Radiology Venereal Diseases Orthopedics Vaccination, and Anæsthetics.

EXAMINING BODIES AND SCHOOLS IN IRELAND

UNIVERSITY OF DUBLIN, TRINITY COLLEGE (SCHOOL OF PHYSIC)

Matriculation—University students take the entrance examination to Trinity College and a junior freshman term examination or a special medical preliminary , extern students take any examination recognised by the General Medical Council

Pre registration Examination in Elementary Physics and Chemistry—Before beginning the five years' Medical curriculum students must pass an examination in elementary Physics and Chemistry This examination is held at the end of September, in January, in March, and in July Courses in preparation for it may be taken in the School of Physic

Degrees in Medicine (M.B), Surgery (B Ch), and Midwifery (B A O)—Candidates for these degrees must be of B.A standing and must be for at least five academic years on the books of the Medical School, reckoned from the date of registration. The Arts course may be taken concurrently with the Medical course, the B A. degree need not be taken before the final medical examinations, but the Medical Degrees are not conferred without the Arts degree The following courses must be attended (1) Botany, Zoology, Physics, and Chemistry, Descriptive and Applied Anatomy , Histology, Biochemistry, Physiology and Applied Physiology , Pathology and Bacteriology , Materia Medica and Therapeutics , Medical Jurisprudence and Hygiene , Practice of Medicine , Surgery , Midwifery and Gynæcology (2) Three courses of nine months' attendance on the Clinical Lectures of Sir Patrick Dun's or other recognised Hospital (3) Practical Vaccination, one month's instruction (4) Mental Disease, three months (5) Practical Midwifery with Clinical Lectures including Antenatal and Infant Hygiene Clinics, also not less than 20 personally conducted cases, five months, one of which must be as a resident intern student (6) Ophthalmic Surgery, three months Three groups of examinations have to be passed Preliminary Scientific Examination, including Physics and Chemistry, Botany, and Zoology Intermediate Medical, Part I , including Anatomy and Physiology, Biochemistry and Histology , Part II , including Applied Anatomy and Applied Physiology , and the Final Examination, which is divided into Part I , Materia Medica and Therapeutics, Pathology and Bacteriology , and Part II Medicine, including Clinical Medicine, Hygiene, Jurisprudence, and Mental Diseases , Surgery including Operative and Ophthalmic Surgery , Midwifery and Gynæcology Part I may be passed in the fourth year, and Part II completed at the end of the fifth

Doctor in Medicine—A Doctor in Medicine must have passed all the qualifying examinations and must be a B.A of three years' standing He must also submit a thesis and pass an Examination before the Regius Professor of Physic

Master in Surgery—A Master in Surgery must be a Bachelor in Surgery of the University of Dublin of not less than three years' standing and must produce satisfactory evidence of having been engaged for not less than two years from the date of his registration in the study, or study and practice, of his profession He must then pass a special examination

Master in Obstetric Science— A Master in Obstetric Science must be a Bachelor in Obstetric Science of two years' standing and must produce evidence of having been engaged in the study or practice of Obstetric Medicine and Surgery during two years He is then required to pass a special examination

Diploma in Gynæcology and Obstetrics—A post-graduate diploma is conferred upon registered medical practitioners who take a six months' course at the Rotunda Hospital or other recognised institution, a six months' course in Trinity College, and then pass a special examination The minimum time required for the complete course is nine months

Bachelor in Dental Science and Master in Dental Science—The regulations under which these degrees are awarded can be obtained by application to the Registrar of the School of Physic

All Degrees and Courses of Instruction are open to women students

Scholarships and Prizes—1 Medical and Surgical Travelling Prizes, £100, awarded in alternate years. 2 Bicentenary Memorial Prize, £30, awarded yearly, and given to the Travelling Prizeman 3 Sir John Banks Prize and Medal 4 Edward Hallaran Bennett Prize and Medal 5 FitzPatrick Scholarship, awarded on results of Final Examination (interest on £1000) 6 Medical Scholarship, £20 per annum for two years, awarded in Chemistry, Physics, Botany, and Zoology 7 Medical Scholarship in Anatomy and Physiology, £20 per annum for two years 8 Henry Hutchinson Stewart Scholarships, one in Botany, Zoology, Chemistry, and Physics, and another in Anatomy and Physiology, awarded annually and valued at £10 per annum for three years 9 Henry Hutchinson Stewart Scholarship in Mental Diseases, awarded from time to time, £50 per annum for three years 10 John Mallet Purser Medal, awarded annually in Physiology 11 Daniel John Cunningham Medal and Prize, awarded annually in Anatomy 12 Begley Studentship, £40 per annum for four years, awarded annually 13 Kingsmill Jones Memorial Prize, awarded annually in Natural and Experimental Science, £15 14 O'Sullivan Memorial Scholarship, £48, awarded annually for excellency of record in school 15 Adrian Stokes Memorial Fellowship awarded every second year, the holder to carry out original work in Pathology and Bacteriology, about £320 16 Aquilla Smith Prize, awarded annually in the Final Medical Examination, Part I , about £10 17 Walter G Smith Prize, awarded annually in Materia Medica and Therapeutics, about £10 18 De Renzy Centenary Prize in Public Health, awarded annually, £15 19 Conolly Norman Medal in Mental Diseases

Post-graduate Instruction—Arrangements have been made, with the approval of the Board of Trinity College, for a post-graduate course of instruction at the School of Physic during the autumn from Monday, Sept 20th, to Friday, Oct 8th Women graduates can be accommodated at Trinity Hall

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NATIONAL UNIVERSITY OF IRELAND

Matriculation—All students must pass a matriculation examination , the examination taking place in June and September in Dublin, and at certain local centres, includes five subjects, three of which must be Irish, English, and mathematics All students must pass in Irish except students not born in Ireland, and other students whose home residence shall have been outside Ireland during the three years immediately preceding their matriculation , but all such students will be expected to attend a course of instruction in Irish Literature and History prior to obtaining any degree in the University The following are the subjects for examination (1) Irish (2) Latin (3) Greek (4) French (5) German (6) Italian (7) Spanish (8) Portuguese (9) Welsh, or any other modern language approved by the Senate (10) English (11) Mathematics (12) History (13) Geography (14) Applied Mathematics, or Physics as an alternative (15) Chemistry (16) Botany (17) Agricultural Science (18) Commerce (19) Music, and for women candidates only (20) Physiology and Hygiene Students entering for degrees in Medicine or Dentistry, if not already registered by the General Medical Council, must take Irish, Latin, English, Mathematics, and a fifth subject

The medical degrees granted are —
M B B Ch B.A O M.D., M Ch M.A O Ph.D —Printed forms of application for admission to any medical examination may be had from The Registrar The National University of Ireland 49 Merrion square Dublin

The Constituent Colleges of the National University of Ireland at which the full curriculum for medical degrees can be obtained are University College Dublin; University College Cork and University College Galway

University College, Dublin

Matriculation —Almost all the students of the College are matriculated students of the National University of Ireland The pre-registration examination in physics and chemistry is taken after matriculation either at the beginning of or during the winter session The course is of five years duration and dates from the passing of the pre registration examination

Degrees of M.B B Ch. and B.A O —The First Examination includes Applied Physics, Applied Chemistry Botany Zoology and Applied Biology The examination may be taken in two parts Part I Physics and Chemistry Part II., Botany and Zoology Honours may be obtained only when both parts are taken as one examination The Second Examination includes Anatomy and Physiology Both must be passed at the same time The Third Examination (Part I) includes Pathology Materia Medica Pharmacology, and Therapeutics Part II. (Third Examination) taken at the end of the Fourth Winter Session includes Hygiene and Medical Jurisprudence

The Final Examination in Medicine Midwifery Surgery and Ophthalmology includes both the theoretical and the clinical branches No student can enter for the M.B., B Ch or B.A.O until the end of the fifth year after registration when the curriculum has been completed The degree of M.D may be obtained either by examination or on published work.

The D P.H Course extends over the year beginning at the opening of the session

University College Cork

In the School of Medicine students must have passed the Matriculation Examination of the University or some other recognised examination and a preliminary examination recognised by the General Medical Council

Medical Students who have passed the First Professional Examination of the Conjoint Boards of Ireland England or Scotland may be admitted to the rank of second year students on making application to the Council Similarly, students who have passed the Second Professional Examination of the same Boards may be admitted to the rank of third year students; and those who have passed the Third Professional Examination of the Dublin Colleges or of the Edinburgh Colleges and Glasgow Faculties, may rank as fourth year The degrees of the National University are open only to students who having passed a recognised entrance examination have pursued approved courses of study in a recognised or constituent college of the National University

The school is provided with physiological toxicological pathological and pharmaceutical laboratories, materia medica anatomical, and pathological museums as well as a collection of surgical and obstetrical instruments and appliances There are dissecting rooms well-appointed physical, chemical and biological laboratories a large natural history museum in the adjoining building, and part of the College ground is laid out as a botanical garden The plant houses are well filled with plants and are open to the students in the class of Botany The Library contains about 70 000 volumes and is open daily during term time to students The Medical Museum occupies a large building erected at the northern end of the medical departments.

Clinical Instruction.—Students may attend the South Charitable Infirmary and County of Cork General Hospital, Cork North Charitable Infirmary and City of Cork General Hospital the Mercy Hospital the Cork District Lunatic Asylum the Victoria Hospital for Diseases of Women and Children, the County Lying in Hospital, Bon Secours Fever the District, and Ear Eye and Throat Hospitals. Candidates are prepared for D.P H

Complete information with regard to class fees scholarships, and prizes can be obtained from the Dean of the Medical Faculty, and in respect of the hospitals from the Secretaries.

Residence of Students —Students not living at home, or with relatives or friends sanctioned by their parents or guardians are required to live in a hostel or in recognised lodgings and register their addresses each session The Honan Hostel adjoining the College is equipped by private endowment A number of sets of rooms, together with recreation and common rooms are provided for lay students who may desire to live there For full particulars apply to the Warden There is a Hall of Residence for Catholic Women Students under the management of the Sisters of La Retraite du Sacré Coeur For particulars apply to Rev Mother La Retraite Cork There are Students Clubs for men and women students of the College and various athletic clubs.

University College Galway

The College contains a well lighted and ventilated dissecting room and an anatomical lecture theatre physiological pathological pharmaceutical chemical and physical laboratories anatomical pathological, gynæcological and materia medica museums as well as large natural history and geological museums and an extensive library in which students can read and from which they can borrow books In the School of Medicine there are 12 Entrance Scholarships varying in value from £30 to £60 each, for which Medical Students compete with other students on the Entrance Course In the Second Third, and Fourth years three Scholarships in each year value from £30 to £40 each are reserved for Medical Students. H. H. Stewart Scholarships (£10 a year for three years) are awarded by the University in Anatomy and Physiology at Second Medical Examination amongst Students of the three constituent Colleges Travelling Studentships (£200 a year for two years) are offered by the University for competition amongst Medical Graduates of the three Colleges of not more than two years standing Women students are eligible for all College and University Degrees, Distinctions, and Prizes There are extensive grounds a portion of which is occupied by a Botanic Garden and a portion is at the disposal of the College Athletic Union There are several student societies in the College including a Biological and Medical Society There are facilities for research and Post-graduate work in the Chemistry Physiology Pathology and Anatomy departments. There are ample facilities for Women Students.

Clinical Instruction is given in the Galway Central Hospital and in the Galway Tuberculosis and Fever Hospitals The CENTRAL HOSPITAL (300 beds) is completely renovated In addition to the surgical and medical departments there are now eye and ear throat and nose gynæcological and obstetrical pathological X ray electrical and massage departments Medical and Surgical Clinics are held on alternate days during term Two Resident Physicians and two Resident Surgeons are appointed every six months Resident Students are admitted The hospital is open to qualified medical men for post-graduate work

HOSPITALS AFFORDING RECOGNISED PRACTICE [1]

The following hospitals afford practice recognised by the Irish Universities and Corporation Further information can be obtained from the respective secretaries

Sir Patrick Dun's Hospital

Classes both in Medicine and Surgery are held each morning at Grand Canal-street, Dublin, from 9 o'clock from the beginning of October till the end of June Special classes for junior students will be held in the wards during the months of October, November, and December A resident surgeon, resident casualty officer, and resident physician, with salaries, are appointed annually Six resident pupils are appointed every six months Sixteen surgical dressers and 16 clinical clerks are appointed each month There are facilities for women students

The practice of the hospital is open to all students, and the certificates are recognised by Dublin University, the National University, and Royal Colleges of Surgeons of England, Ireland, and Scotland. It is an official " Treatment Centre " for venereal diseases

The new out-patient department has medical, surgical, gynæcological, ear, nose and throat departments, and an accident department, with theatre and dressing dispensary

Prizes and Medals—Clinical medals and prizes amounting to about £21 each will be awarded in medicine and in surgery respectively in accordance with the will of the late Rev Samuel Haughton, M D , S F T C D Candidates who fail to obtain these medals and prizes will be awarded special certificates in medicine and surgery provided they show sufficient merit

Adelaide Hospital

Two resident surgeons and four or more resident pupils are elected every six months

Prizes—The Hudson Scholarship, £30 and a Gold Medal, as well as the Hudson Prize, £10 and a Silver Medal, are awarded at the end of the session for proficiency in medicine, surgery, gynæcology, and pathology In addition to this prizes are awarded in gynæcology and dermatology, and in clinical medicine and surgery for junior students Wallace Beatty Memorial Bursaries are granted at the discretion of the Medical Board at the beginning of the Winter session The certificates of attendance are recognised by all the Universities and licensing bodies in the United Kingdom Post-graduate work in the hospital is in conjunction with the course in Trinity College

Mater Misericordiæ Hospital

This hospital, under the care of the Sisters of Mercy, containing 300 beds and 96 private beds, is open at all hours for the reception of accidents and urgent cases Clinical instruction is given by the staff Ophthalmic surgery and surgery of the nose and throat are taught in the special wards and in the dispensary Surgical operations are performed daily Connected with the hospital are extensive dispensaries, which afford valuable opportunities for the study of general medical, dermatological, surgical diseases, and accidents , a fully equipped biochemical laboratory, a modern electro-massage department, an electrocardiograph room, and radiological department Instruction is given on pathology and bacteriology Four house physicians, eight house surgeons, and 18 resident pupils are elected annually Dressers and clinical clerks are appointed regularly and certificates given for merit. Leonard Prizes will be offered for competition annually Certificates of attendance are recognised by all the Universities and licensing bodies in the United Kingdom There is a private hospital for the reception of medical and surgical cases A training school and a home for trained nurses are connected with the hospital, and nurses who have passed a qualifying examination can be obtained on application to the Lady Superioress Entries can be made with any of the physicians or surgeons or with the Registrar, 8, Fitzwilliam-place, Dublin

Mercer's Hospital

This hospital, situated in the centre of the city of Dublin, is in closest proximity to the Medical Schools, any of which can be reached on foot within five minutes, and from its position receives a large number of cases of emergency surgery in addition to the ordinary medical and surgical practice Extensive alterations and reconstruction have brought the wards up to date Additions have been made in the radiographic and electrocardiographic departments Classes for pupils are held on alternate mornings in the medical and surgical wards There is a large out-patient department available for the teaching of medicine, surgery, and gynæcology Arrangements for clinical instruction are made with Cork-street Fever Hospital A gold medal is awarded annually to the best pupil on the books of the hospital, and an annual prize of £25 has been added A house surgeon and a house physician are appointed annually, and there is residential accommodation for six men and two women pupils Clinical clerks and dressers are appointed from the classes

Richmond, Whitworth, and Hardwicke Hospitals

These House of Industry hospitals, North Brunswick-street, Dublin, contain 325 beds—140 for surgical cases, 75 for medical cases, 78 for fever and other epidemic diseases and an auxiliary wing with 32 beds, devoted mainly to throat, nose and ear, and skin diseases Three resident physicians and three resident surgeons are appointed each half year Resident clinical clerks are appointed each quarter, and it has always been the aim of the Medical Board to ensure that each student spends at least six months in residence In addition, junior students are appointed as extern clinical clerks and surgical dressers Women students are eligible on the same terms as men. Ample facilities exist for post-graduate work in the various special departments, as well as in general medicine and surgery Extensive alterations and improvements have recently been made in the X ray, electrotherapeutic, and electrocardiographic departments Two open-air pavilions to accommodate ten patients have been erected in the spacious Whitworth grounds A new students' residency has been opened This contains facilities for 20 male and 8 female resident students

Royal City of Dublin Hospital

The hospital contains 160 beds and a special wing for the treatment of fevers and contagious diseases founded by the late Mr Drummond There is a large nursery where special opportunities are afforded for the study of diseases of children, both medical and surgical There are also special wards for ophthalmic, aural, and gynæcological cases , also a department for the Erlangen Treatment by deep therapy There is a largely attended out-patient department, where students are allowed to attend accidents and dress cases under supervision. Six resident pupils are appointed every three months A house surgeon and a house physician are appointed annually

Dr Steevens' Hospital

This hospital, at Dublin (Kingsbridge), contains 190 beds There is accommodation for 10 resident pupils, each of whom is provided with a separate bedroom, and board is supplied by the hospital at a reasonable rate There are massage, sun ray' and diathermy X ray and pathological departments. The X ray equipment has been renewed and a new pantoscope installed, as well as a new short-wave diathermy and electrocardiograph apparatus There are also two V D wards and a largely attended V.D treatment centre as well as a large ward reconstructed and re-equipped and opened as open air ward for tuberculous and other diseases of bone (25 beds) for females two open-air verandahs for male surgical tubercular cases (14 beds) and children s ward (12 cots) Daily clinical instruction in medicine surgery, and X ray is given to extern students

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[1] This list of the institutions recognised by the Conjoint Board of Ireland is supplemented in the regulations of the Colleges by those hospitals mentioned as recognised institutions in Scotland and England The recognised facilities for clinical instruction in some of the Irish centres have been described The secretaries of the hospitals will always be ready to answer inquiries or to give additional information

Meath Hospital and County Dublin Infirmary

The hospital contains 156 beds, available for clinical teaching both medical and surgical A special surgical ward has been set apart for the reception of children. Special departments are as follows Ear Nose and Throat Dental Disease of Women Skin, and Genito-urinary System Clinical Teaching includes classes for both Senior and Junior Students. The Joseph Smyth Scholarship in Medicine value £50 is awarded biennially Gold and Silver Medals are given annually for the best answers in an examination in Clinical Medicine and Surgery Prizes are also awarded to the Junior classes at the Sessional Examination Two House Surgeons, a Resident Casualty Officer and a House Physician are selected each half year from fully qualified pupils of the hospital A new students quarters has recently been erected. The Meath Hospital is within a few minutes walk of the University of Dublin, the Royal College of Surgeons, and The National University

Jervis street Hospital, Dublin *

This hospital contains 120 beds Eight resident medical officers are appointed each year and facility is thus given to past students of the hospital to acquire experience as house surgeons Resident students are provided with apartments fuel and light free of charge Arrangements have been made by which students of the hospital can have special fever training in Cork-street Fever Hospital free of charge

St. Vincent s Hospital and Dispensary Dublin

This hospital was founded in 1834 and has been administered since by the Sister of Charity Admission is free to the poor without any distinction of creed, preference being given to city patients attending the out-patient department. Patients who can contribute towards their maintenance may do so but no distinction is made between them and the free patients. The general hospital contains 176 beds and is equipped with medical surgical gynæcological, pathological radiological, and other special departments There is a full honorary visiting staff and the resident staff consists of a senior resident medical officer and four intern and two extern medical officers The out-patient department has seating accommodation for 200 patients the following sections being open daily medical surgical, gynæcological, throat and nose, eye and ear dental massage and pharmaceutical. Special dispensaries are open once a week for diseases of the skin and rheumatism in children as is a general evening clinic for the convenience of working people. The departments of pathology and the electrocardiograph are housed in this building There is an institute for the training of nurses. A private home is attached and staffed by sisters and nurses who have been trained in the hospital

Certificates of clinical teaching issued by the hospital are recognised by the universities and licensing bodies. Clinical lectures in medicine and surgery are held from October to June; the junior class is held from October to December Lectures include instruction in special subjects in accordance with the recommendations of the General Medical Council The following medals and prizes are open to students of the hospital Bellingham gold medal in medicine, O Ferrall gold medal and McArdle prize in surgery and the Richard Tobin junior prize

The complete reconstruction and enlargement of the Hospital on a new and much larger site has been recommended by the Hospitals Commission in their report 1933-34 (published 1936) but the scheme is awaiting the decision of the Minister for Local Government and Public Health.

Rotunda Hospital

The Rotunda Hospital, Dublin, is the largest combined gynæcological and maternity hospital in the British Empire Over 4500 confinements are attended annually and upwards of 1000 gynæcological patients admitted Students can take their necessary gynæcological and midwifery practical courses. The work of the hospital is carried on continuously through the year, and consists of daily clinical instruction in the maternity department and examination and operations in the gynæcological department. Qualified students are given facilities for studying and assisting in the management of all abnormal cases so far as is practical They also assist in rotation at gynæcological operations and if staying more than two months are personally allowed to perform some minor ones. An antenatal clinic the infant department and dispensary are available also A special class in gynæcological examination and diagnosis is conducted by the assistants to the master In addition there is a special class in operative obstetrics, limited in number The pathological laboratory has been considerably enlarged and offers convenient facilities for practice work to post-graduates and students. A biochemist on the staff is carrying out the Aschheim Zondek test for pregnancy and is prepared to help any post-graduates who are keen on doing research work on the material in the hospital There is a fully equipped X ray installation under the care of a radiologist The infant department has been opened for the treatment of infantile conditions and is under the care of a pædiatrician who gives instruction in the out-patient department which is held daily The appointments on the staff of the hospital are given to qualified past students of the hospital who have taken the L.M and consist of extern assistants for six months, one being appointed every three months From these the assistants to the master are appointed. Women students can reside in the hospital on the same terms as men. Board and residence can be obtained in the hospital. One grass and two hard tennis courts and one standard squash racquet court are available for students in the residents mess The L.M certificate is given to qualified practitioners on examination after six months attendance at the hospital (four months in the case of those who took their midwifery training in the hospital) Fees: one month, £6 6s months other than first £4 4s three months £12 12s L.M. course £21

Coombe Lying in Hospital

The Coombe Lying in Hospital and Guinness Dispensary for the treatment of diseases peculiar to women, Dublin contains 70 beds and consists of two divisions, one of which is devoted to lying in cases and the other to the treatment of diseases peculiar to women. The hospital gives to men and women students and post-graduates a thorough training in obstetrics and gynæcology Lectures are delivered, practical instruction given and gynæcological operations are performed daily There is a special afternoon dispensary held by the Master and his assistants, at which practical instruction in gynæcology is given. There is no extra charge for attendance at this dispensary or at the prenatal clinic, held on three evenings a week, at which there are about 3000 attendances annually Every year

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* No returns

about 1200 women are delivered in the hospital and about 1500 in the district There is accommodation for intern pupils, who enjoy exceptional advantages of acquiring a thorough knowledge of this branch of their profession Women students can reside in the hospital The students' residence has been redecorated throughout Certificates of attendances at this hospital are accepted by all licensing bodies Students can attend at any time An annexe containing a labour ward and 26 beds has been erected and will be opened shortly

National Maternity Hospital

This new hospital at Holles street, Dublin, is now in full working order It has 80 beds and comprises intern and extern maternity, gynæcological wards, and a dispensary for the treatment of diseases of women, an infant clinic, and an antenatal and postnatal branch The antenatal and postnatal instruction is given three times a week Every facility is given for the carrying out of practical work, and modern equipment provides full facility for the treatment of both maternity and gynæcological patients Undergraduate and post-graduate courses are arranged at any time and clinical instruction is given daily and oral lectures four times a week. Certificates of attendance at this hospital are recognised by all the licensing bodies The L M Diploma is given by special examination, which is held four times a year Total number of admissions last year 3127 The building of a final section of the hospital, containing 64 additional beds and a new out-patient department, has now begun

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QUEEN'S UNIVERSITY OF BELFAST

There are six degrees in the Faculty of Medicine of the University—viz , Bachelor of Medicine (M.B), Bachelor of Surgery (B Ch), Bachelor of Obstetrics (B A.O), Doctor of Medicine (M D), Master of Surgery (M Ch), and Master of Obstetrics (M.A.O) The University also grants a Diploma in Public Health and a Diploma in Psychological Medicine, particulars of which will be found in the University Calendar The degrees of M.B , B Ch , and B A.O are the primary degrees in the Faculty of Medicine, and are conferred at the same time and after the same course of study No student is admitted to the final examination for these degrees until he has shown (1) that he is a matriculated student of the University , (2) that he has completed the prescribed course of study in the Faculty of Medicine extending over a period of not less than five academic years from the date of his registration as a student of Medicine , (3) that he has passed the several examinations prescribed , (4) that he has attended in the University during three academic years at least the courses of study prescribed for such degrees (the Senate may accept, for not more than two academic years of the required five, courses of study pursued in any other University or School of Medicine approved by the Senate), and (5) that he has attained the age of 21 years Every candidate for admission shall matriculate or fulfil such other test of fitness as may be prescribed by the Senate, or may be exempted from the matriculation examination by having passed similar examinations elsewhere

For information as to Scholarships and Prizes, inquiry should be made of the Secretary of the University

Primary Degrees of M.B , B Ch , B A O —All candidates for these degrees must satisfy the examiners in the subjects of four examinations

The First Medical Examination —The subjects of this examination are Chemistry (Inorganic and Organic), Experimental Physics, Botany, and Zoology The examination will be divided into two parts which may be taken separately I , Chemistry and Physics , II , Botany and Zoology

The Second Medical Examination —The subjects are Anatomy and Practical Anatomy, Physiology and Practical Physiology Candidates who have previously passed the First Medical Examination may present themselves for this examination at the close of their second year

The Third Medical Examination —The subjects are (1) Pathology and Practical Pathology , (2) Materia Medica, Pharmacology, and Therapeutics , (3) Medical Jurisprudence , (4) Hygiene Candidates who have previously passed the Second Medical Examination may present themselves for Part I of this examination at the close of the third year and for Part II at the end of the Winter Session of the fourth year Attendance on a course in any subject of the Third Medical Examination shall not entitle a student to a certificate of attendance unless he has previously passed in all the subjects of the Second Medical Examination

The Fourth Medical Examination —The subjects are (1) Medicine , (2) Surgery , (3) Midwifery and Gynæcology , (4) Ophthalmology and Otology Candidates who have previously passed the Third Examination may present themselves for the Fourth Examination at the close of the fifth year, provided that they have fulfilled the necessary requirements as to attendance, &c , on the courses of instruction *in the subjects of examination and on the clinical* courses in the hospitals Attendance on a course in any subject of the Fourth Medical Examination shall not entitle a student to a certificate of attendance unless he has passed in the subjects of Part I. of the Third Medical Examination

Degrees of M D , M Ch , and M A O —These degrees are not conferred until the expiration of at least three academic years, or in the case of graduates of the University in Arts or Science of at least two academic years, after admission to the primary degrees in the Faculty of Medicine Every candidate must show that in the interval he has pursued such courses of study, or been engaged in such practical work as may be prescribed These degrees may be conferred by the Senate either (*a*) after an examination, which includes written, oral, clinical, and practical examinations , or (*b*) on the submission of a thesis or other evidence of original study or research, to be approved by the Faculty of Medicine after an oral or other examination of the candidate on the subject

The Medical School —The Donald Currie Chemical Buildings contain a lecture theatre, a preparation room, a chemical museum, a large class-room for elementary practical chemistry, laboratories for qualitative and quantitative analysis, rooms for water and gas analysis, dark room for photographic purposes and balance room, provided with all modern appliances The Anatomical Department contains a large and well-lighted dissecting-room, a lecture room, a professor's and demonstrator's room, a bone room, and a laboratory for microscopic and photographic work The Medical Museum is in the same building The Jaffé Laboratories for Physiology comprise a lecture theatre, laboratories for practical work in chemical physiology, histology, and experimental physiology, and in addition small private research rooms, including balance, galvanometer, and centrifuge rooms The J C White laboratories are fully equipped for research in biochemistry The Institute of Pathology, which is adjacent to the Royal Victoria, Royal Maternity, and Children's Hospital, provides fully equipped accommodation for Pathology and Bacteriology, including class-rooms, demonstration room, lecture theatre, library museum and research laboratories There is an ample supply of material for investigation by graduates in morbid histology, clinical pathology, and the bacteriology of infectious diseases A course in pathology or bacteriology is given to graduates, and members of this class have an opportunity of seeing the methods employed in the various investigations carried out in the department for the Public Health Committee of the Corporation in connexion with water-supply, sewage disposal, meat- and milk-supply, and the diagnosis of cases of infectious diseases The certificate issued to members of the class in bacteriology qualifies for the D.P.H degree. The Pharmaceutical Laboratory is fitted and equipped for the work of practically instructing students in the compounding and dispensing of medicines.

Clinical Instruction—The following institutions are recognised by the University as affording proper opportunities *for* clinical *instruction:* the Royal Victoria Hospital the Mater Infirmorum Hospital, the Belfast Hospital for Sick Children the Royal Maternity Infirmary and Hospital the Ulster Hospital for Women and Children (56 beds) the Benn Ulster Eye Ear and Throat Hospital (30 beds) the Belfast Ophthalmic Hospital (30 beds) the City Fever Hospital, Purdysburn (300 beds) the Union Fever Hospital (200 beds) and the Belfast District Lunatic Asylum, where the Purdysburn Villa Colony has 1350 beds.

Further information can be obtained from the respective secretaries.

Royal Victoria Hospital Belfast

There are 430 beds. Students eligible for McGrath, McQuitty, Malcolm, Coutler Smyth and Elwood Scholarships aggregate annual value £185 Twelve house surgeons and house physicians. Thirty-six resident pupilships three months each annually for senior students, of which a proportion is allotted to women students, special departments for radiology clinical pathology V.D dermatology gynæcology maternity vaccine therapy, electrocardiography dentistry radium therapy Post-graduate lectures and demonstrations are given on Wednesdays throughout the year with the exception of holiday seasons

Mater Infirmorum Hospital Belfast

This hospital contains 270 beds and is open at all hours for the reception of accidents and urgent cases. Clinical instruction is given daily by Physicians and Surgeons Surgical operations are performed daily The out-patient departments in medicine and surgery also the special dispensaries for gynæcology ear eye and throat, electrotherapeutics, venereal diseases, varicose veins, and hæmorrhoids are very largely attended and afford valuable opportunities to students for the study of those subjects. There is a well-equipped electro-medical and massage department. A new extern has been erected beside the hospital on ground given by the Government of Northern Ireland. This will relieve the congestion of the old extern which at present is in the course of being converted into a new radiological unit and in part as accommodation for resident students, the increase of X ray work indicating that the present department was insufficient Separate rooms will now be *available* for screening and radiography waiting and dressing cubicles for the patients and a secretarial office and the usual offices of the modern unit. A file of teaching films is being constantly added to A *fine* and extensive nurses home has also been built in the vicinity of the hospital There is also a dental dispensary A house physician and two house surgeons are elected every six months Resident pupils are admitted as the vacancies arise Three Exhibitions and a Gold Medal are competed for annually in June Certificates of attendance upon this hospital are recognised by all the Universities and licensing bodies in the United Kingdom

Belfast Hospital for Sick Children

At the hospital on Falls Road there are 80 beds, and clinical instruction is given. During the winter and summer sessions courses of lectures are delivered on the medical and surgical diseases incidental to infancy and childhood. Demonstrations in ophthalmology and pathology are given, and ample opportunities are afforded in the wards and in the out-patient department for gaining a practical and theoretical knowledge of the diseases of infancy and childhood. A department for conservative dentistry for small children has recently been equipped and is now in use. This hospital grants Certificates in Diseases of Children which are recognised by the various examining bodies. Certificates are also granted for post graduate study A Gold Medal is offered for competition at the close of the session A Davis Scholarship is awarded every two years for the best thesis on some branch of children's diseases.

Belfast Infirmary and Hospital

There are 1000 beds Clinical courses are given quarterly and a course for *D.P H* in hospital An intern venereal clinic in infirmary is under the Corporation scheme. The maternity wards are recognised for practical midwifery training The certificates of the vaccination class are recognised by the Ministry of Home Affairs for Northern Ireland There is a department for cancer with 32 beds, also X ray bacteriological dental and massage departments

Royal Maternity Hospital Belfast

This building is in the grounds of the Royal Victoria Hospital There are 100 beds and an *antenatal* department catering for a large district. There is also an infant clinic and a separate isolation block for the treatment of puerperal sepsis The university obstetric tutor resides in the hospital *and* acts as senior resident medical officer There *are* three house surgeons in addition, and resident accommodation for 15 students or post-graduates.

IRISH MEDICAL CORPORATIONS GRANTING DIPLOMAS

CONJOINT EXAMINING BOARD

The Conjoint Board of the Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland requires of *candidates the* passage either of its own preliminary examination in the subjects of general education or proof that the candidate has passed one of the tests accepted by the General Medical Council as well as passing in the Pre-Registration Examinations in Chemistry and Physics and Biology

Professional Examinations—There are *three* pro fessional *examinations the* first of which cannot be completed earlier than the end *of* the second winter session, nor the final before the *conclusion* of full five years of medical study Before being admitted to *any of them the candidate* must show that he has studied the different subjects in practice and theory for the requisite periods certificates to this effect being accepted from the authorities of most of the *recognised medical schools* at home and abroad The first examination consists of Part I. (*a*) Biology (*b*) Applied Chemistry and Physics; Part II Anatomy and Physiology The second examination deals with (*a*) Pathology (*b*) *Materia* Medica, Pharmacy and Therapeutics (*c*) Forensic Medicine, Hygiene and Public Health (*d*) Ophthalmology, and may be taken separately

Final Examination—This is divided into three divisions which cannot be completed until at least five years have passed in medical studies other than those for the Pre-Registration Examinations and five years at least since the beginning of the curriculum. The divisions are (*a*) Medicine including Fevers Mental Diseases and Diseases of Children (*b*) Surgery including Operative Surgery (*c*) Midwifery including *Diseases of* Women and Children and the Practice of Vaccination.

Diploma in Psychological Medicine—There are two examinations in connexion with this Diploma: Part I. consists of (*a*) Anatomy and Physiology of the Nervous System; (*b*) Psychology Part II.: (*a*)

Neurology, including Clinical and Pathological Neurology, (*b*) Psychological Medicine, including its legal relationships

Further information can be obtained from the Secretary of the Committee of Management, Royal College of Surgeons, St Stephen's Green

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

The College issues its Licences in Medicine and in Midwifery to Medical Men whose names appear on the Registers of the General Medical Council or of Saorstat Eireann

The Licence in Medicine —The subjects of examination are. Practice of Medicine, Clinical Medicine Pathology, Medical Jurisprudence, Midwifery, Hygiene, and Therapeutics

The Licence in Midwifery —Candidates must produce certificates of registration A registered medical practitioner of five years' standing may be exempted from the examination by printed questions

The Membership —Examinations for Membership are held in February, June, and November

The Fellowship —Fellows are elected by ballot An applicant must have been a Member of the College for at least one year and must have attained the age of 27 years

Further particulars can be obtained from the Registrar of the Royal College of Physicians of Ireland, 6, Kildare-street, Dublin

ROYAL COLLEGE OF SURGEONS IN IRELAND

The College issues its Licence in Surgery to practitioners whose names are entered either on the Medical Register for the United Kingdom, the Colonial Medical Register, or the Foreign Medical Register of the year in which he presents himself for examination, and who satisfies the Council that he has passed through a course of study and Examinations equivalent to those required by the Regulations of the Irish Conjoint Board

Candidates are examined in General Surgery (paper and oral), Clinical Surgery, Surgical Pathology (oral), Operative Surgery, Surgical Anatomy (paper), and Ophthalmic and Aural Surgery (clinical)

Diploma in Midwifery —A diploma in Midwifery is granted after examination to persons possessing a registrable qualification

Fellowship Examinations —Candidates for the Fellowship shall make application to the President and Council to be admitted to examination They are required to pass two examinations—Primary and Final Candidates may present themselves for the Final Examination immediately after passing the Primary part, provided they have complied with the necessary regulations The subjects for the Primary Examination are (*a*) Anatomy, including Dissections, and (*b*) Physiology and Histology The subjects for the Final Examination are Surgery, including Surgical Anatomy and Pathology For admission to the Final Examination the candidate must have passed the Primary Examination, and must be a Licentiate or Graduate in Surgery of a university or licensing body recognised by the General Medical Council, all such candidates must not be less than 25 years of age

Further particulars can be obtained from the Registrar of the College, Stephen's Green West, Dublin

Schools of Surgery

The Schools of Surgery are attached by Charter to the Royal College of Surgeons and have existed as a department of the College for over a century They are carried on within the College buildings and are specially subject to the supervision and control of the Council, who are empowered to appoint and remove the professors and to regulate the methods of teaching pursued The buildings have been reconstructed, the capacity of the dissecting room nearly trebled, and special pathological and bacteriological laboratories are fitted with the most approved appliances in order that students may have the advantage of the most modern methods of instruction Winter Session commences in October, Summer Session in April Scholarships and Prizes Carmichael Scholarship, £15, Mayne Scholarship, £8, Stoney Memorial gold medal, Operative Surgery, gold and silver medals, Barker Prize, £26 5s, H Macnaughton-Jones gold medal in Obstetrics and Gynæcology and class prizes and medals Prospectus and guide for medical students can be obtained post free on written application to the Registrar, Royal College of Surgeons, Stephen's Green West, Dublin

APOTHECARIES' HALL OF IRELAND

The Licence of this Hall is granted to students who present certificates of having fully completed the course of study as laid down in the curriculum and who pass the necessary examinations The diploma of the Hall entitles the holder to be registered as a practitioner in medicine, surgery, and midwifery, with also the privileges of the Apothecary's Licence

Candidates must pass three Professional Examinations, called the First and Second Professional Examinations and the Final Examination, which are conducted at separate times, partly in writing and partly practically and orally The Examinations are held thrice a year—viz, in March, June, and November, or such other dates as may be determined.

Candidates who produce satisfactory evidence of having passed an examination for a Degree or Licence in Medicine, conducted by any University or Royal College in the British Empire, or by any Foreign University whose Degrees are recognised in the Foreign List of the Medical Register, will be exempted from the Primary Examination

The subjects for the First Professional Examination are Anatomy, Physiology and Histology, including Biochemistry, and for the Second Professional, Materia Medica and Pharmacy, Pathology, and Medical Jurisprudence and Hygiene

For the Final Examination the subjects are (*a*) Medicine and Clinical Medicine and Clinical Methods (*b*) Surgery—Clinical, Ophthalmic, and Operative, and Surgical Anatomy (*c*) Midwifery and Gynæcology, and Practical Pharmacy and Materia Medica (if not taken at Intermediate Examination)

Each candidate before receiving his diploma must produce evidence that he has attained the age of 21 years The details of the course of education required and syllabus of the examinations will be supplied by the Registrar at 95, Merrion square, Dublin

WE take this opportunity of thanking the officials of Government Departments and the deans and secretaries of the various institutions for their kind coöperation in enabling us to bring the information contained in our Students' Number up to date

MODERN TREATMENT OF FRACTURES —A post-graduate course on this subject has just been concluded at the Bristol Royal Infirmary The lecturers were Prof E W Hey Groves, Mr K H Pridie, and Mr F Wilfred Willway The course extended over a week Each morning from 9 A.M to 11 A M a clinic of out patient cases chosen to illustrate the various regional fractures was followed by a lecture discussion After lunch there was a cinema demonstration of special problems, and then ward rounds and operations on alternate days At 4 P M practical demonstrations of methods of reduction and plaster fixation were given, members of the course being allowed to do the work under supervision The course was so well attended that it is proposed to hold a similar course in January, 1938

GENERAL MEDICAL COUNCIL

POWERS DUTIES AND CONSTITUTION

THE General Council of Medical Education and Registration of the United Kingdom is first, a registering body: no person, even though his qualifications have been obtained by examination, is a *legally qualified* medical practitioner until his name appears on the Medical Register Secondly, it is a standardising body ensuring that there is a definite minimum of medical education and scientific examination Thirdly it is a penal and disciplinary body having power to remove from the Register any practitioner convicted of felony or misdemeanour or adjudged guilty of professional misconduct Fourthly the Council possesses the exclusive right of printing publishing and selling the British Pharmacopœia The duties of the Council are thus primarily of a public nature and its constitution shows its fitness for its fourfold responsibilities

The Council consists of 42 members of whom 18 are chosen by universities and 9 by licensing corporations; 5 members are nominated by the Crown on the advice of the Privy Council, and 7 others are elected by the members of the medical profession as Direct Representatives. The Crown members and the university representatives need not be medical men and one layman appointed by the Privy Council now sits on the Council. Three additional members are appointed for dental business by the Privy Council under the Dentists Act 1921 under which the powers and duties of the General Medical Council with regard to the keeping of the Dentists Register and the administration of the Dentists Acts were largely transferred to the Dental Board of the United Kingdom.

The Educational Curriculum

Professional Education —The course of professional study after registration as a student occupies at least five years The Final Examination in Medicine Surgery and Midwifery must not be passed before the close of the fifth academic year of medical study *

REGISTRATION OF MEDICAL STUDENTS

Before registration as a student every candidate must produce evidence that (*a*) he has attained the age of 17 years (*b*) that he has passed a recognised examination in general education; and (*c*) that *in addition thereto* he has passed or obtained exemption from an examination theoretical and practical in elementary physics and elementary chemistry conducted or recognised by a licensing body The standard of General Education required is approximately that of University Matriculation or entrance examination in the Faculties of Arts or Pure Science Examinations other than Matriculation must be of the standard prescribed in Section 2 of the Regulations below

An approved course of instruction in elementary biology at a secondary school or other teaching institution recognised by a licensing body may admit a student to the professional examination in elementary biology upon registration as a medical student. The student should in every case write beforehand to the Body whose qualification he desires to obtain, and although it is not necessary to pass in Biology before registration as a student, application should be made at the same time to the Body selected to ascertain their requirements.

The candidate commencing medical study should apply to the registrar of the division of Great Britain and Ireland in which he is residing according to a prescribed form copies of which may be had on application to the several licensing bodies, medical schools and hospitals, or at the offices of the Council; and should produce proof that he or she has fulfilled the first three conditions

MAINTENANCE OF REGISTER OF MEDICAL STUDENTS

1 The Education Committee prepares and issues from time to time a list of examining bodies whose examinations in general education fulfil the conditions of, and are recognised by the Council

2 The Council has recognised the undernoted university examinations which are conducted in Great Britain and admit to the Faculties of Arts or Pure Science, or to other Faculties, subject to the conditions specified below:—

Oxford University Responsions; Cambridge University The Previous Examination. The Matriculation Examinations of the following Universities: Birmingham Bristol Durham, Leeds, Liverpool London Victoria of Manchester Sheffield and Wales, and the Entrance or Preliminary Examination of the Universities of Scotland.

The condition prescribed by the Council in Faculties other than Arts or Pure Science is that —

The certificate shall bear evidence that the candidate has passed at the Matriculation or Entrance standard in the following subjects, viz.: (*a*) English (*b*) Mathematics Elementary (*c*) A language other than English (*d*) A fourth subject, as defined in the regulations of the particular Examination to be chosen from the subjoined list, viz.: History Geography Physical Science Natural Science Botany; Latin Greek, Hebrew French German, or other language accepted by the University

3 Subject to the condition prescribed above (Section 2) the Council will recognise those of the examinations conducted by recognised authorities in Great Britain which are accepted by any one or more of the above-named Universities as equivalent (under prescribed conditions as to credits" or grades) for purposes of Entrance or Matriculation to an Examination named in the preceding list (Section 2) In School or Leaving Certificates the four required subjects must have been obtained at not more than *two* sittings Such Examinations are —

Bristol University Higher School Certificate Examination; School Certificate Examination. Cambridge Local Examinations Syndicate Higher School Certificate Examination School Certificate Examination. Central Welsh Examination Board: Higher Certificate Examination; School Certificate Examination Durham University: Higher Certificate Examination; School Certificate Examination London University: Higher School Certificate Examination; General School Examination. Northern Universities Joint Matriculation Board: Higher Certificate Examination; School Certificate Examination Oxford and Cambridge Schools Examination Board: Higher Certificate Examination; School Certificate Examination. Oxford Delegacy for Local Examinations: Higher School Certificate Examination School Certificate Examination. Scottish Education Department: Leaving Certificate Examination.

4 The Council will continue to recognise certain Examinations conducted by Educational Bodies, other than those (mentioned in Section 3) whose Examinations are accepted by any one or more of the Universities of Great Britain Recognition will not be extended under this Section to any Examination unless the Council is satisfied (*a*) that in scope and standard it is equivalent to a recognised Matriculation or Entrance Examination of a University of Great Britain, (*b*) that it fulfils the condition prescribed by the Council (Section 2) and (*c*) that the Examination has been completed at not more than two sittings Such Examinations are:—

The College of Preceptors (England) Senior Certificate (with *credit*) The Educational Institute of Scotland: Preliminary Medical Certificate

5 Subject to the prescribed condition (Section 2) the Council will recognise the Entrance Examination to the School of Physic of the University of Dublin, and the Matriculation or Entrance Examinations of the National University of Ireland the Queen s University of Belfast, the Irish Royal Colleges of Physicians and Surgeons; and also the Senior Grade or Leaving

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New resolutions in regard to professional education were adopted by the Council May 29th 1936 and will come into operation on Nov 1st, 1938

Certificate of the Department of Education of the Irish Free State, the Senior Certificate Examination of the Ministry of Education of Northern Ireland, and all examinations accepted by any one or more of the Universities of Great Britain or Ireland, as equivalent, for purposes of entrance or matriculation, to the above-named University Examinations

6 Subject to the prescribed condition (Section 2), the Council will recognise all Examinations of Colonial or Foreign Universities which are accepted by any one or more of the Universities of Great Britain as equivalent for purposes of entrance or matriculation, to an examination named in the list of examinations recognised by the Council (Section 2)

7 The Council will recognise the Final Examinations for Degrees in Arts or Science of any University of Great Britain or Ireland or of the British Dominions

8 The registration of medical students is placed under the charge of the Branch Registrars

9 Each of the Branch Registrars keeps a register of medical students

10 The Branch Registrar enters the student's name and particulars in the Student's Register, and gives him a certificate of such registration

11 Each of the Branch Registrars supplies to the several licensing bodies, medical schools, and hospitals, in that part of Great Britain or Ireland of which he is Registrar, blank forms of application for the registration of medical students

12 A copy of the Medical Students' Register prepared by each of the Branch Registrars is transmitted, on or before Dec 31st in each year, to the Registrar of the General Council, who distributes the list to the licensing bodies, medical schools and hospitals

All applications for special exceptions to the foregoing regulations as to registration should be addressed to the Registrar of the General Council, and are decided by authority of the Education Committee, who report thereon to the Council

MEDICAL SCHOOLS AND COLLEGES

The Universities, including their Colleges and Medical Schools, and Schools of Medicine at which Medical Study may be commenced in the United Kingdom are set out seriatim in the following pages

Medical Registration in Ireland

By legislative agreement between the Governments of Great Britain, of the Irish Free State, and of Northern Ireland, the powers and duties of the General Council of Medical Registration and Education are continued as heretofore in respect of qualifying bodies in the Irish Free State, and of medical practitioners qualified in the Irish Free State Side by side with this a Medical Council has been set up in the Irish Free State with the duty of establishing and controlling a Register for the Irish Free State Practitioners whose names are on the General Register, and persons who pass a qualifying examination in the Irish Free State, will be registered on the Irish Free State Register on payment of the prescribed fee The Irish Free State Medical Council have, over those whose names are on the Irish Free State Register, the same disciplinary powers as are possessed by the General Council over those whose names are on the General Register To possess the privileges of a qualified practitioner in the Irish Free State it is necessary to be registered in the Irish Free State Register

The net result of the change in the law as regards the practitioner qualifying in the Irish Free State in the future is that (1) if he intends to practise only in the Irish Free State he need only register in the Irish Free State Register, (2) if he intends to practise in Great Britain he will register in the General Register, and (3) if he is in doubt where he will practise he will register in both Registers He will, as he registers in one Register, or in both Registers put himself under the disciplinary control of the one Council or of both Councils No practical inconvenience is caused, and practitioners qualified in the Irish Free State in future will not find themselves deprived of any former privileges or rights

Dental Board of the United Kingdom

Anyone who is on the Medical Register is entitled to practise as a dentist, although he cannot register as such without a degree or licence in dentistry, but it is a distinct advantage to take a special dental qualification, otherwise few dental appointments at general or special hospitals or dispensaries are available, and, under the National Health Insurance (Dental Benefit) Regulations, a registered medical practitioner cannot give dental treatment to insured persons as an additional benefit unless he is registered in the Dentists Register

Under the Dentists Act, 1921, the powers and duties of the General Medical Council under the Dentists Act, 1878, and under the Medical Act, 1886, which related to the keeping of the Dentists Register and the administration of the Dentists Acts were largely transferred to the Dental Board of the United Kingdom. The registration of dental students at the commencement of their dental studies, and the power to erase a name from the Dentists Register, remain with the Council, but the inquiry into disciplinary cases rests with the Board, who forward their reports and findings to the Council

The Dental Board consists of a chairman and 12 members The chairman is appointed by the Privy Council Other members of the Board are appointed by the Minister of Health, the Department of Health for Scotland, the Governor of Northern Ireland, and the General Medical Council (3), and four members are elected as representatives by the dentists possessing degrees or licences in dental surgery or dentistry, and practising in England and Wales, Scotland, and Ireland, and two by dentists registered under the Dentists Act, 1921

REGISTRATION OF DENTAL STUDENTS

The General Medical Council's current Regulations in regard to the registration of dental students came into force on Oct 2nd, 1933, and provide that the registration of dental students shall be carried on at the General Medical Council Office in London, in the same manner as that of medical students, and be subject to the same regulations as regards age and preliminary examinations, but professional study may commence either at a recognised dental hospital or school, or by pupilage with a registered dental practitioner

Candidates for a diploma in dental surgery should produce certificates of having been engaged for at least four years in professional studies, and of having received during 24 calendar months instruction in dental mechanics It is recommended that instruction in dental mechanics be taken at a recognised dental hospital and school If any part of such instruction be taken by the candidate as a pupil with a registered dental practitioner, the time required to be devoted to it shall be at least twice the time required for the corresponding instruction taken at a dental school Two years' bona fide apprenticeship with a registered dental practitioner, after registration as a dental student, may be counted as one of the four years of professional study When a student can show evidence of regular pupilage for not less than two years in dental mechanics to a registered dentist, prior to the passing of the prescribed preliminary and scientific examinations, he may antedate his registration for a period not exceeding one year prior to the passing of these examinations

Offices

The address of the Registrar, to whom further communications should be addressed, is as follows The Registrar of the General Medical Council, 44, Hallam-street Portland-place, London, W 1 The offices of the Dental Board are at the same address

A memorandum on the procedure to be adopted by those who desire to enter the profession of medicine, with notes on costs and prospects, and a similar memorandum in regard to dentistry, may be obtained on payment of 1s each

MEDICAL RESEARCH COUNCIL

THE Medical Research Council, formerly the Medical Research Committee National Health Insurance was incorporated under the present title in 1920 coming under the direction of a committee of the Privy Council. It distributes moneys voted by Parliament and other privately contributed, funds for the furtherance of medical research work in the United Kingdom and other parts of the Empire The work supported by the Council is published partly in its own Special Reports Series (H.M Stationery Office) but mainly in the form of papers in scientific journals. In addition, the Council issues each spring an annual report giving a general review of the research supported with references to scientific papers; these reports have proved of the greatest value to the medical profession and to all workers in the cause of health while they also form a practical liaison betwen the public and scientific medicine The Council which has regularly assisted clinical and other research work by grants has recently instituted studentships and fellowships with the object of encouraging young British medical graduates of special ability and original mind towards becoming investigators in those branches of medical science concerned directly with disease as it occurs in human beings Each selected student will receive an inclusive stipend at the rate of £200 per annum, during a period not exceeding 12 months for his maintenance while undertaking approved courses of study in this country calculated to advance his training in methods of research This study may include modern languages and such advanced physiological, pathological, and special clinical work under recognised teachers as may be regarded as forming a suitable preliminary to serious research work to be undertaken later, but the approved course may not include studies of which the purpose is to enable the student to pass further examinations The Council also offer four research fellowships at £250 per annum for candidates of similar qualifications who have already had some experience in the use of research methods Each fellowship will be tenable for one year and possibly for a second year at £300 per annum. These fellowships are intended as probationary appointments for research in clinical science or experimental pathology under suitable direction in this country Research expenses will be provided in addition to stipend. Forms of application can be obtained from the secretary Medical Research Council 38 Old Queen-street, London S W 1 and should be filled in and returned to him before Oct 1st 1937

Junior and senior fellowships for research in tropical medicine are also offered by the Medical Research Council. Inquiries about these should be addressed to the secretary Tropical Medical Research Committee 38 Old Queen-street, London S W 1 from whom forms of application may be obtained.

RESEARCH FACILITIES AT THE ROYAL COLLEGE OF SURGEONS

DURING the current academic year 1937–38, the new Bernhard Baron research laboratories of the Royal College of Surgeons of England will be opened in Lincoln s Inn-fields. These laboratories, together with the Buckston Browne research farm at Downe Kent will form the research institute of the college. Laboratory facilities are available for workers who desire to undertake investigations which will throw light on problems of surgical diagnosis and treatment and investigations in the field of medical science generally Although fellows and members of the college have first call on the facilities of the laboratories workers who do not hold these diplomas are given facilities when accommodation is available Application should be made to the director of research at the College stating qualifications, experience, and an outline of the proposed research. When a worker is accepted he is allowed, if he so wishes to reside at the research farm where a limited number of single rooms are provided. Physiological equipment X ray apparatus, histological facilities and operation theatres are provided in each unit.

The College offers a limited number of scholarships and also provides funds to defray the expenses of the laboratory work.

MEDICAL APPOINTMENTS AT L C C HOSPITALS AND INSTITUTIONS

THE hospital service of the London County Council provides opportunities for valuable experience for medical graduates who intend to be general practitioners or consultants as well as for those who intend to make the public health service their career Under the operation of the Local Government Act, 1929 the L.C C is responsible for the management of 74 hospitals (excluding mental hospitals)—namely, 28 general hospitals, including one for children, 10 hospitals and institutions for the chronic sick, 2 convalescent hospitals for general cases, 2 hospitals for sane epileptics, 16 fever and other hospitals for infectious diseases 9 tuberculosis hospitals including three for children, 5 special hospitals and convalescent *homes for children and one hospital for the treatment* of ophthalmia neonatorum and vulvo-vaginitis in children *and one for the treatment of venereal* disease

Medical superintendents of the hospitals, who are expected to be experienced hospital administrators, receive £900 to £1650 a year corresponding to hospitals varying in accommodation from 100 to 1300 patients. In addition medical superintendents are provided with an unfurnished house or quarters with payment by the Council of local and water rates.

The subordinate staff is classified thus

Grade.	Scale of annual salary
Deputy Medical Superintendent Grade I.	£650–£50–£800
Deputy Medical Superintendent Grade II.	£600–£30–£750
Senior Assistant Medical Officer Grade I	£550–£25–£650
Senior Assistant Medical Officer Grade II	£500–£25–£600
Assistant Medical Officer Grade I rising to £450 if placed on promotion list.	£350–£25–£425
Assistant Medical Officer Grade II.	£350 (fixed)

In addition all these officers are provided with board lodging and washing All the positions mentioned involve full time duties, and it is a condition *of* service that such officers shall not undertake any other paid employment The staffing provides, where necessary for house physicians or house surgeons, remunerated at the rate of £120 a year with residence and for clinical assistants, who are non resident and receive £150 a year with meals when on duty These officers are not employed in a whole-time capacity and are granted adequate leisure for study

Deputy medical superintendents and senior assistant medical officers who occupy unfurnished houses or quarters (married quarters) in the hospitals are paid the following salaries in lieu of those set out above The unfurnished houses or quarters are provided free of charge the Council also paying all local and water rates —

Grade	Scale of annual salary
Deputy Medical Superintendent, Grade I.	£700–£50–£850
Deputy Medical Superintendent, Grade II.	£650–£30–£800
Senior Assistant Medical Officer Grade I.	£600–£25–£700
Senior Assistant Medical Officer Grade II.	£550–£25–£650

Vacancies in the higher grades are filled as far as possible by promotion from the existing staff. For subordinate staff the extent and fluidity of the hospital service provides unique opportunities for a variety of experience, and facilities exist for specialisation and for officers to follow courses of study outside the service with a view to improving their professional qualifications

During the past year 185 vacancies have been filled, including 3 positions as medical superintendents, 3 as deputy medical superintendents, 25 as senior assistant medical officers, 102 as assistant medical officers, and 52 as house surgeons, house physicians, or clinical assistants In addition, a large number—more than 200—of part-time consultants and specialists are employed in the various hospitals These appointments, which vary from 1 to 7 sessions a week, include physicians, surgeons, obstetricians and gynæcologists, anæsthetists, pædiatrists, neurologists, orthopædists, radiologists, dermatologists, ophthalmologists, urologists, and ear nose, and throat specialists Towards the end of the year two part-time obstetricians and gynæcologists commenced duty at four general hospitals These officers, who devote the equivalent of half their time to the work of the maternity units, visit each of the two hospitals to which they are attached daily (including Sundays, if necessary) and as required Subject to the administrative supervision and control of the medical superintendents, they are responsible for the whole of the obstetric and gynæcological work of the hospitals to which they are attached In addition, other part-time consultants and specialists were employed for special purposes—e g venereal disease specialists, plastic and thoracic surgeons, &c —and the services were available of a tuberculosis officer at each general hospital having a tuberculosis ward

Undergraduate facilities —The following general hospitals are affiliated to medical schools for the purpose of clinical teaching —

Council's Hospital	*Medical School*
St Charles'	Charing Cross
St. Alfege s St Olave s Lewisham	Guy's
St Giles Dulwich	King's College
Archway	Middlesex.
St Mary, Islington Highgate St Pancras	Royal Free
Hackney Bethnal Green	St Bartholomew s
St. Mary Abbots	St George s
Paddington	St Mary's
Lambeth	St. Thomas s.
St Mary Islington	University College
St Stephen s	Westminster

Obstetric instruction —In addition, undergraduates from seven medical schools are accepted as students for instruction in obstetrics at the following general hospitals —

RESIDENT STUDENTS

Council's Hospital	*Medical School*
St James	St Thomas's.
Mile End	London Hospital
St Giles St Andrew s	St Bartholomew's
St Mary Abbots	Middlesex
Lewisham	St George s King s College

NON RESIDENT STUDENTS

St Alfege s Hospital	Guy's

The fever hospitals provide facilities for undergraduate instruction in infectious disease (see p 502)

Small-pox —Provision is also made for demonstrations in the diagnosis and treatment of small-pox for both under graduate and post-graduate students

Special units —There are the following special departments for the treatment of various diseases in the hospitals

Unit	*Hospital*
Plastic surgery	St James
Thoracic surgery	St Mary Abbots Hospital
Thyroid disease	New End
Radium and deep X ray therapy	Hammersmith Lambeth
Urological diseases	St Mary, Islington
Rheumatoid arthritis	St Stephen s
Vulvo vaginitis	St Margaret s
Congenital syphilis in children	St John s
Surgery of cardiovascular diseases	Lambeth
Patients with foreign bodies in the air passages and upper food passages	St Giles
Diabetes	Mile End St Peter s St George in the East
Out patient psychiatric clinics	Mile End St Charles St Mary, Islington
Rheumatism in children	Norwood
Puerperal fever	North Western
Poliomyelitis (infectious cases)	Western
Otological (infectious) cases	Southern
Congenital malformations in children	Queen Mary s Carshalton
Post-encephalitis lethargica	Northern
V D in women	Sheffield street

Post-graduate facilities —The British Postgraduate Medical School, of which an account is given on pp 490 and 491, is attached to Hammersmith Hospital At St Alfege's students for the final F R C S at Guy's can examine select cases under a surgical tutor At St Andrew's a consultant surgeon holds weekly classes for two periods of about ten weeks before the same examination The South-West London Post Graduate Association has its head quarters at St James' Hospital where three sessions of lectures are delivered annually, in collaboration with the Fellowship of Medicine instruction is given in orthopædic surgery and special anæsthesia for plastic surgery At the North-Western and Brook Hospitals lectures and demonstrations on clinical practice and hospital administration are given to candidates for the public health diploma

Recognition for examinations —The majority of the general hospitals are recognised for qualification for candidature in branch 1 of the University of London M.D Examination Thirteen of the general hospitals are recognised by the British College of Obstetricians and Gynæcologists for candidature for their Diploma and membership Seventeen general hospitals are also recognised by the Royal College of Surgeons of England for the purposes of the Final fellowship examination

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M D DEGREES OF SWISS UNIVERSITIES —The Universities of Basle, Bern, Geneva, Lausanne, and Zürich grant the degree of Doctor of Medicine to "medical practitioners from other countries who are legally entitled to practise in their country of origin" under the following conditions 1 Pursue a course of study in the final subjects of the medical curriculum, and pass a viva-voce examination in such, at the end of one academic year (nine months) The normal period of study is from October to July The viva voce is usually taken at the end of the Lent term (March) or early in the summer term (May–June) 2 Prepare at the same time a thesis for the doctorate, which has to be accepted by the Faculty of Medicine towards the end of the year The total fees (examination and diploma) amount to Fr 450 Swiss (£25) At Lausanne there is a tutor for British practitioners At Geneva and Lausanne a laboratory or clinical course is so arranged that it provides the subject matter for the thesis, which is prepared during the entire stay The candidate should make written application to the Dean of the Faculty of Medicine, and further information can be obtained in this country from the hon secretary of the Lausanne Medical Graduates' Association the Corner House, Queensway, Lincoln)

THE LANCET

LONDON SATURDAY AUGUST 28 1937

Increasing attention to be paid to the health of medical students

In a letter written to a hospital journal a week or two ago a dean remarks ' I am quite conscious of the fact that the student s life makes a great call upon his general health so that by the time he has held a resident appointment he is liable to fall by the way It would not be difficult to illustrate this statement by experience in not very remote days About the turn of the century a clear majority of the housemen of a teaching hospital in London broke down with frank tubercle either during their residence or within a short time of it and the fact that this breakdown was attributable to the circumstances of the life they were living rather than to any inherent weakness is made evident by the happy sequel that most of them regained their health so completely in the end as to fill important positions at the hospital or outside without concern for their health The dean of any school might fairly put to the student the question what is the good of my educating you if you do not keep fit ? and the medical student might with equal fairness reply to the dean do you take the same interest in keeping me fit as you do in educating me ? It would be unfair at the moment to decide which if either is to blame for the fact that the course of medical study does actually take rather high toll of life in its most critical years Certainly it would be immodest for the medical student to claim any monopoly of self sacrificing energy over students of other faculties (Bob Sawyer and Ben Allen are not yet obsolete) but whereas most other students graduate at the end of three years and then have a period of relaxation the medical student whose preclinical work ends in what in effect is graduation in science then embarks at once on a further period of three years or more in which the risk of infection is added to the ordinary strain of student life and at this stage there is often some false sense of values as to where duty lies Let us give a single example A woman student who had just taken her second M.B (we are speaking of 20 years ago) went straight to a strenuous hospital post with long hours of duty day and night lasting for a period of three months She had hesitated to ask for a fortnight s interval before starting hospital work, feeling that the request would not be welcome Her finger became septic she returned to work without an adequate holiday and succumbed soon after to an acute infectious disease contracted in hospital. Her fellow students who had watched the change from robust health in her early days at the medical school to what was almost a physical wreck were naturally angered at what they felt to be the tyranny of the hospital atmosphere This was long ago—but can it be truly said that the same urge is not felt now in some degree or that the responsibility for the maintenance of the medical student's health has been squarely faced by those supervising his professional education ? Not if it is still a fact that at any hospital the clinical years are booked up by student appointments month by month without compulsory break

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Encouragement of athletic activities such as sports boxing and sailing and of participation in games by all students, not only by those who show special aptitude has been a method of keeping students fit which is said to have achieved success where it has been tried The dean of one of the London medical schools struck by the absurdity of students coming from homes where they had been accustomed to daily exercise and some sort of organised sport to drop all this and spend their lives between dingy lodgings London streets and hospital class rooms determined to build up a school at which everyone willy nilly should take some sort of recreation His idea, we understand was not to develop individual prowess or to make a splash in competitive sports although incidentally a certain number of inter hospital cups may have been won. Without letting games get out of focus the aim was rather to set up a public opinion which expects a student to do something in the playing field indifferently though he may do it Games however will never seriously interest a substantial minority of students Opportunities of course vary widely but an inquiry by the National Union of Students has shown that the proportion who use the athletic facilities offered varies in different universities from 10 to 60 per cent with an average of perhaps one in four For a long time past physical training has been a compulsory part of the instruction of students in education But why this singular limitation ? The argument for the inclusion of physical training in the medical curriculum is at least as strong and there is now on foot in London a wide movement to provide some organised physical training for medical students and a reasonable hope that for this purpose the medical schools of London may obtain the help they need through the University Regular courses open to all students at Cardiff Sheffield and Southampton, are beginning in these places to banish the constipated complexion and the custard face that J G ADAMI used to deprecate in Liverpool and which are not to be seen among overseas students and Rhodes scholars Medical students should at least know what is regarded officially as the most useful form of physical training and try its effect on themselves then being what they are they might be allowed to contract out provided the equivalent kept them reasonably fit and happy

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While there may be as Prof J S B STOPFORD has insisted good reason for the medical student not withdrawing himself in most matters from the general life of the university, it can hardly be in doubt that medical students run a special risk to their health owing to their vocation, and that this risk requires special measures The evidence may be scanty but it is cumulative, and in the Milroy lectures [1] we have something definite about one such risk, although Dr D'Arcy Hart is careful not to exaggerate X ray pictures of the chest do show more evidence of progressive tubercle in the later than the earlier years of medical training, and the increase is greater in medical students than in a parallel series of dental and law students Obviously the medical student cannot be protected from potential infection like any other student should be, but two things might be done, both involving some degree of hardship Young adults who do not react to tuberculin, when used (say) in the Mantoux test, are almost certainly more susceptible to tubercle than are those who have already been, as one might say, salted This knowledge has come to us via the nurse, where the non reactor, at least in Scandinavian experience, has been alarmingly apt to come to harm It might be wise, if harsh, to exclude such students (and certainly such nurses) from contact with tubercle unless vaccination with B C G will turn them into positive reactors Or they might submit to a routine radiographic examination of the chest, as is now being done at University College Hospital, London, and accept guidance accordingly Starting in February last year 300 U C H students were examined, none of them refusing to coöperate, and there have since been the same number of re examinations, responsibility for which has now been undertaken by the Royal College of Physicians on a larger scale under the terms of the Prophit bequest As a result of the first examination 232 of the 300 were told to return in a year, 63 within a shorter time, 4 had some restriction placed on their work, and 1 was advised to stop work and go at once to a sanatorium Up to date four cases of progressive pulmonary tubercle have been detected and sent to sanatorium, one of them is back at work and another expected to resume work shortly Dr Hart has met all the objections which can be raised to such a scheme It may excite antipathy because it differs so profoundly from the principle underlying the patient/family doctor/specialist relationship of orthodox medical practice The examiner's function is, however, merely advisory When the unconscious resistance to this principle has been got over, it will be remarked that there is something to be said for applying to the medical student the same principle as is now applied in the child welfare clinic or in school medical inspection, as well indeed by many dental surgeons in private practice The student's distrust of the scheme may arise from two causes dread of tubercle itself, which is best met by providing him with experience that the majority of his fellow workers who are found to have lesions return to their jobs after treatment, and the fear of breaking up his career, which would be met by providing economic security from some kind of provident scheme

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Insurance companies regard university students and especially women students as a very bad risk, and any working scheme is likely to be one of mutual providence Swansea made an essay on orthodox insurance lines but without success The hostel of the Imperial College of Science, London, was perhaps first in the field with a compulsory levy of 5s a year per head towards a common fund, and Aberystwyth followed in 1923 with a provident scheme for medical attendance on male students, which was extended to women in 1931 and then made compulsory The premium of 10s a session has now been increased to 12s 6d which permits unlimited call on the chemist and on a doctor chosen from a panel Five years ago Oxford entered the field with a much more ambitious scheme to meet the special medical needs and risks of its undergraduates, covering not only general medical services but also surgical operations and nursing Here the arrangements for professional services and treatment are left in the hands of the member in consultation with his doctor, the inclusive annual premium is 3 guineas, while the liability of the association is limited to the payment of £63 to a member in any one year, and to the payment of the same sum in respect of any one operation or illness The success of the scheme was assured by 700 applications received within a month or two of its announcement, and about half the undergraduates, men and women, now belong There have been many inquiries but so far no scheme of the kind has been started elsewhere The council of the National Union of Students discussed last month whether the incidence of accident and illness among students was high enough to justify any special system and decided in the affirmative, without expressing any final opinion on the merits of these various schemes or of an alternative suggestion for the student to use public medical services at a capitation fee of 30s per annum But there was an impression that, outside perhaps Oxford and Cambridge, no complete scheme could be self-supporting without assistance from university funds or from the University Grants Committee Much of course turns on the qualification for admission to any such scheme Oxford has no examination but excludes some applicants on their previous record For grant-aided students of education medical examination is everywhere compulsory Birmingham has extended such examination on a voluntary basis, gratis and confidential, to all its women students, and some of the London medical schools are talking of doing the same for all their students The N U S favours a compulsory medical examination at the end of a university course, or after three years of study have been completed Whether the examination should be voluntary or compulsory must soon be decided The N U S is prepared to press for the appointment by each university of a medical officer to keep in touch with the student body as a whole Compulsory examination would benefit any student in the long run, and especially the medical student to whom it would give the necessary basis for guidance and who has the advantage of free treatment in hospital when required

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[1] *Lancet* 1937 1 1033

A few words of warning and encouragement to those proposing to enter general practice

If a man wants to do the best by his car it must be something more than a piece of machinery, he must have a feeling for it and he cannot be a useful practising doctor unless he has a feeling for people who are ill In other words he must be able to look at the objects of his interest from their point of view as well as from his own, he must, in fact start with a receptive personality—it may be surmised that few doctors are seriously defective in this respect What he mostly needs is experience and if he is to be able to guess pretty accurately what is wrong with people who are not well and what to do to make them better it can be done only by soaking himself in the atmosphere of illness and seeing as much of it as he can Clinical experience is and always will be the backbone of medical practice and it is impossible to have too much of it But it is not everything As Prof R J JOHNSTONE said recently at Belfast the opportunities which a nurse has for clinical observation are much better than those of the medical student she sees patients day and night and in many ways has more of their confidence she sees the details of their ups and downs and is expert at appreciating the small signs of progress or retreat and knowing what moods mean she has a good chance, and takes it of seeing the patient from his own point of view and learning what is best to do for his comfort

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But though many patients probably come out of hospital more grateful to the nurse than the doctor she is not qualified to take on the function of the medical man because her standard of reference is not what is wanted in that particular profession In any line of knowledge and work, there are the immediate things which are in hand at the moment with their associated technique and there is a background which may seldom be in conscious view but is none the less necessary In medicine it is made up of a varied mass of elementary science anatomy physiology and pathology and a doctor's feeling for patients must depend on that background as well as on clinical experience if he is to be as useful as he can be Students themselves often enough fail to realise to what an extent their performance when they get out into the world depends on the cumulative foundation of all their early education they have no idea of the intellectual and professional plight they would be in without it It is only in front of that background and in the frame of mind induced by his early studies that a doctor has any serious chance of appreciating the principles which underlie the behaviour of diseases And this quite apart from the fact that there is happily only one basic training for all prospective doctors whether they propose to adopt a purely scientific career or whether they are determined on clinical practice

Whether the present curriculum really fits him for either career has been questioned It is at any rate a common enough experience for a young man going into general practice with a degree and house appointments to his credit to find himself (to his chagrin) ill-equipped to compete with what he meets there Patients and their ailments "seem to come all different" What is the cause and the remedy (so far as there is one) for this sad experience and wherewithal shall a young man in this age of the preventive spirit, make provision for himself against it? The embryo practitioner must accept a curriculum designed in part to prepare him for his work, but in part also to enable examiners to examine him and in part to fulfil certain ideals inherent in it He must accept the fact that few of his teachers have ever been general practitioners he must accept the differences between practice in hospital and in the home That it is no new problem can be seen from the extract from THE LANCET 100 years ago which follows this article, and it is no nearer solution than it was in 1837 What then? How can the student best use his time how can he bend the curriculum and the machinery of his medical school to his own ends?

* * *

These ends he must keep ever in view when he knows, so far as he may what they are He who aims at general practice intends to become one from whom people of every sort can seek for help and advice in every kind of affliction which touches their bodies He should be able to make in every case at least a working diagnosis and to explain to his patient—for he will wish to know—the nature of his ailment (rendered in plain English) and its probable course to treat many disorders unaided and to know when and where to look for specialised assistance Whatever the complaint he must see the matter through In his war there is no discharge His diagnosis prognosis and remedies will be tried out in his own sight and in the sight of his patient and his patient's friends—a hard if wholesome discipline Surgeons physicians, pathologists and the rest will play their part and go He must stay till the curtain falls. This is a great job and it is astonishing that it should ever be belittled.

That it calls for qualities of heart and mind for whose acquisition there is no recipe and for experience which only time can bring is obvious but, putting these aside what else is needful? First, skill in investigation—in patient and accurate history taking and in complete clinical examination These things our student might well expect to be compelled to learn but it is still possible to emerge from a medical school well qualified on paper but with little or no skill in the examination of the less conspicuous parts of the body—nasal passages, teeth, larynx, uterus, fundus oculi, and even tympanic membranes. Our foreseeing student will not rest until he knows he can see, hear, or feel every part of the body which can be seen, heard, or felt. Next he must get to know whether what he sees, hears, or feels is "normal" or "abnormal." This is a life's work but it cannot be begun too early. The wise student will constantly and deliberately examine and re-examine persons, organs, and functions which he has reason to believe healthy; only thus can he begin to define the limits of the normal. He will soon learn, if he observes with open eyes and open mind, that figures or diagrams purporting to lay down a norm for pulse-rate, temperature, blood pressure, hæmoglobin content, height, weight, growth, position of viscera, food requirements, and physiological functions are no more than the mean of individual variations. To remember this is very necessary, for patients believe firmly in these phantoms and must be weaned from their idolatry if they are not to sacrifice their health and that of their children on the altar of an imagined normal.

* * *

It is hard luck that the student must learn normal and abnormal side by side with the emphasis always on the latter; but by diligent attendance in every department he can acquire the full technique of clinical examination (not neglecting X ray shadows and pathologists' reports) and, taking care to preserve his conception of the normal from undue crystallisation, he can at the same time begin his next task—to learn the natural history of diseases, especially the common ones. This he will find very hard, for the great teaching hospital is not in the least like an enormously magnified G.P., nor is its practice like his practice. For many reasons, good and bad, the hospital scarcely regards whole classes of medical problems which daily confront the practitioner. The patient the hospital welcomes has frank organic disease, acute for choice, but in any case well developed and nameable; it should either be amenable to treatment or rare, or (better still) both at once. Unfortunately for the student, though rightly enough for the general weal, transient mild affections and intractable chronic ones are in general unwelcome. But even more unwelcome or unregarded is the patient whose disorder can be described as "functional" or whose ill health is the resultant of many factors—constitution, way of life, state of mind, and chronic infection or degeneration somewhere in the body—and is utterly incapable of bearing a label.

Few of us can find pleasure in unravelling the problems of these unhappy people and attempting to relieve them, but the practitioner, if he professes medicine at all, must set about the task and that daily, and he must not take it hard that the great hospitals will aid him so little either by way of instruction as a student or with assistance in later days. What can our student do? He can beware of the word "functional" (he must beware of jargon in every department) and, if he uses it at all, confine it to actual disorders of function—dyspepsias, cardiac arrhythmias, allergies, and the like—and not regard it as a synonym for hysteria, malingering, and the manifestations of fear or emotional conflict. He need not despise these patients as uninteresting or as frauds. He can find them, if he looks, inconspicuously scattered throughout the hospital, and he can try his prentice hand at dissecting out the causes of their troubles. He will have helped both himself and them by so doing. He must beware too of the cult of the rare. Infrequency is surely the emptiest of all accepted values and it is the common disorders which are of practical importance to the doctor, to his patients, and to the community.

* * *

Lastly he must learn treatment, and here the same difficulties arise. He can easily acquire a knowledge of the details of major surgical operations which he will never perform, but without a special effort he may find himself in practice quite unable to perform those minor operations and manipulations which should be well within his competence, and without detailed knowledge of the devices for relieving pain, procuring sleep, and persuading disordered functions to return to orderly ways which his patients will very properly expect him to know. The minutiæ of treatment, so vitally important in practice, are apt to be neglected alike by examiners and teachers, and indeed the whole hospital is often curiously reluctant to put as it were a polish on its good work. The great barrier to learning these things is shyness; even a becoming modesty and reluctance to worry his seniors may stand in his way.

* * *

There is only one way to it: volunteer to "do things" (under appropriate supervision), gently bother housemen, sisters, and all beneath the highest until they yield up their secrets, stand up to questioning and be caught out, yourself question your patients as to their sleep, their comfort, their lesser pains. They are dumb because they are in the hands of a great institution. They reveal all sorts of curious happenings to their own doctors when they get home. Seek and accept responsibility. Get firmly by heart the doses of the useful drugs and the composition of the useful stock mixtures. Be sure you can use your hands. Never forget that practice is an art and a craft, not a science. Your examiners will see to it that you learn enough and to spare of the sciences on which the art partly rests, but between the scientist and the practitioner there is a great gulf fixed. The scientist pursues knowledge for its own sake. The practitioner should think and act scientifically, that is, as a clear-headed, reasoning man, immune from baseless credulities and rigid formulas, trying all things, accepting only the useful; but he is far more likely to travel on this road as he should if he travels light, unencumbered by too much knowledge of the technique of specialists, of the passing theories of the day, or of rare diseases and their obscure pathology.

Our wise practitioner student will be seen much in the wards still more in the special departments closely observing questioning and handling patients much in the post-mortem room handling organs, less in the museum library, and laboratory and perhaps as little in theatres—whether lecture or operating—as the powers that be will allow

THE LANCET 100 YEARS AGO

August 26th 1837 *p* 800

From a lecture on Materia Medica and Therapeutics delivered at the Windmill street School of Medicine by Dr G G SIGMOND

There is one thing that I must impress on you that you are not to consider because you see a physician at an hospital employing fearlessly and boldly the most active medicines and those in very large doses, that you are justified in doing the same I would have you bear in mind the very great advantages under which he can prescribe his medicine he is not only experienced from his practice upon extreme cases, but there always is within the walls of the hospital medical assistance immediately to be procured if any dangerous effect, under the operation of a particular remedy be visible or if any untoward symptoms arise during his absence not only is there an individual always within the walls upon whose authority the medicine may be discontinued but the physician possesses a knowledge of what counter acting agent may instantaneously be employed; a diffusible stimulant given at the right moment may immediately check the dangerous operation of a remedy everything is at hand, there is no time lost; the laboratory is always open, besides which there are regular well disciplined nurses (oftentimes of as much experience from their daily occupations as some very young practitioners) are always on the watch, and are themselves capable of judging when danger is present And again a physician in London is warranted in the use of remedies which would be unjustifiable in the country in consequence of the facility of getting immediately the required medicines in case of need. You must likewise bear in your recollection, that your doses can never be so strictly adjusted in a private family as in the hospital, where the strength of the medicines is not likely to be variable, where they are generally prepared by well informed persons, where they are administered at the intervals ordered and where indeed such great advantages are given to the sick that an individual under most diseases, is much more likely to recover than he is when surrounded by his own family however anxiously and affectionately they may watch over the sufferer Hospital practice therefore must not be looked upon *as an example always* to be followed,

These are important considerations, which are seldom dwelt upon or pointed out to the young student, who *goes, probably* into the country with the recollections fresh upon his mind of what he has seen his favourite preceptor perform he has witnessed his successful *practice with great interest* and is astonished to find that he is not equally fortunate in his cases, and it often requires a long time to sober the youthful mind *if I may* be allowed the *expression, and to enable it to see things* in their ordinary point of view Besides which he has been so much accustomed only to interesting cases and to see new remedies tried that he has lost all power of judging and controlling ordinary disease The practitioner however who will be most successful is the one who simplifies his practice as *much* as possible by having at the first onset of disease recourse only to the milder remedies, it is not uncommon, by immediate bleeding and by the administration of such remedies as the one I am now speaking of (prussic acid) to see that the disease is aggravated, or so materially altered in its character as to be unknown even by the most experienced man.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 14TH 1937

Notifications—The following cases of infectious disease were notified during the week Small pox, 0 scarlet fever 1171; diphtheria 903; enteric fever, 65; pneumonia (primary or influenzal) 405 puerperal fever 35; puerperal pyrexia, 152 cerebro spinal fever 10; acute poliomyelitis 25; polio-encephalitis 2; encephalitis lethargica, 1 dysentery 25; ophthalmia neonatorum 104 No case of cholera plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on August 20th was 2611 which included: Scarlet fever, 608; diphtheria 650 (diphtheria carriers, 3.) measles, 188 whooping-cough 460 puerperal fever 19 mothers (plus 9 babies) encephalitis lethargica 251 poliomyelitis 6 At St. Margaret's Hospital there were 21 babies (plus 12 mothers) with ophthalmia neonatorum

Deaths—In 124 great *towns* including London there was no death from small pox 1 (0) *from* enteric fever 8 (0) from measles 8 (0) from scarlet fever, 13 (3) *from whooping-cough* 22 (0) *from* diphtheria 41 (14) from diarrhœa and enteritis under two years and 14 (1) from influenza The figures in parentheses are those *for London itself*

Leeds reported the only death from enteric fever *Outside* London diphtheria was fatal in 20 great towns in 2 cases each at Manchester and Sheffield Birmingham had 5 deaths from diarrhœa Liverpool and Sunderland each 4

The number of stillbirths notified during the week was 241 (corresponding to a rate of 33 *per* 1000 total births) including 42 in London

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdr P N Button O.B.E to *Victory* for Portsmouth Dockyard

Surg Lt Comdr W P E McIntyre to be Surg Comdr

Surg Lt-Comdrs G Ronson to *Curacoa* J J Bonson to *Drake* for R.N B; R C. May to *President* for course; and R A. Graff to *Drake* for R.N Hosp Plymouth

Surg Lts T F Miles to *Drake* for R.N.B A J Glazebrook to *Pembroke* for R.N.B and to *President* for course G T Holroyd, W H.E McKee, R. T May and M. F Sheehan to *Victory* for R.N B; L G Yendoll to *President* for course and C. J P *Pearson to Vindictive* (on comm.)

The following officers qualified at the examination for promotion to surgeon-commander *held recently* Surg-Comdr (provisional) C A. Downard R.A.N and Surg Lt Comdr G Rorison R.N No officers qualified for accelerated promotion.

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt-Comdr T G Evans to *Vernon*.

Surg Sub Lt L S Anderson promoted to Surg Lt

Proby Surg Lt H B Howell to be Surg Lt

Proby Surg Lt W S Walton to *Iron Duke*.

ROYAL ARMY MEDICAL CORPS

Capt W F Lane to be Maj (prov)

ROYAL AIR FORCE

Squadron Leader G J Hanly to R.A.F Hospital Cranwell *for duty* as M.O

Flying Offrs C D Clements to R.A.F Station Waddington; N P R. Clyde to No 1 Flying Training School Leuchars A W St C Greig to R.A.F Station Grantham; J R McWhirter to No 5 Flying Training School Sealand; F V Maclaine *to* No 2 Flying Training School Digby; and A. Muir to R.A.F Station Thornaby

Dental Branch—Flight Lt S C Allen to R.A.F Station Grantham

Flying Offr H. B Shay to Medical Training *Depôt Halton*

RESERVE OF AIR FORCE OFFICERS

Flying Offr C W Kidd relinquishes his *commission* on July 1st 1937 consequent on the conversion of the *Special* Reserve to the Auxiliary Air Force

THE MEDICAL SERVICES

NAVAL MEDICAL SERVICE

THE Naval Medical Service now offers to well-qualified medical men a very satisfactory career, with excellent opportunities for the practice of their profession and for specialisation in many subjects, the pay is good, and so is the prospect of promotion to the higher ranks with an adequate pension on retirement

The following information embodies the principal conditions of service

Entries will be on a Short Service basis, and will be for an initial period of 3 years, to be extended to 5 years at the discretion of the Admiralty

On appointment, new entrants undergo an initial course during which they receive instruction in the Naval aspects of medicine and the organisation and administration of the Naval Medical Service This is followed by a period of service at one of the principal Naval barracks or hospital, and is succeeded by various periods of service at home or abroad, afloat or ashore, as required

Officers leaving the service at the end of 3 years will be eligible for a gratuity of £400, whilst those who leave at the end of 5 years will receive £1000

Officers may be transferred to the Permanent List at the discretion of the Admiralty A gratuity of £1000 (less Income Tax) will be paid, but the Officer will be required to render a minimum of 25 years' service in order to qualify for full pension including seniority granted, if any, in respect of Civil Hospital time With regard to the latter, antedate of seniority of not more than one year may be allowed in respect of resident appointments in Civil Hospitals held prior to entry to the R N Medical Service The antedate will count for seniority and eligibility for increase of pay, and if the officer is transferred to the permanent list it will count also as service for the purposes of promotion and retired pay or gratuity on retirement

Opportunities will be afforded for suitable officers to specialise during the course of their career, and the number of Specialists posts carrying additional emoluments is over 85

The age of retirement in the case of Surgeon Commanders is 55, and in the case of Surgeon Captains 57

Candidates below the age of 28 years are preferred

KITCHENER MEDICAL SCHOLARSHIPS

By arrangement with the Lord Kitchener National Memorial Fund these Scholarships may be awarded to the sons of Officers and Men or of ex-Officers and Men of H M Forces who desire to take a medical training with a view to obtaining a regular Commission in the Medical Services of the Navy, Army, or Air Force Since the cost of Scholarships awarded to Candidates who enter the Royal Navy is borne by Naval Funds, a sum not exceeding the total value of the Scholarship will be deducted, at the discretion of the Admiralty, from any gratuity which may be payable to a Scholarship holder who fails to serve for 15 years in the Royal Navy

MEDALS AND PRIZES

Awards and prizes open to Naval Medical Officers are the Gilbert Blane Medal, the Chadwick Naval Prize, the North Persian Forces Memorial Medal, and the Parkes Memorial Prize

PROMOTION

Promotion to Surgeon Lieutenant-Commander is automatic, subject to the necessary minimum of sea-time being served and to satisfactory reports Promotion to Surgeon Commander is principally governed by success at a promotion examination, prior to which a course of five months' post-graduate instruction is given In the higher ranks promotion is strictly by selection The total number of Surgeon Captains and officers above that rank is 40 Every permanent officer becomes eligible for selection for a higher post after 8 years' service as Surgeon Commander, and promotion usually takes place after 11 to 12 years' service in that rank.

PAY AND ALLOWANCES

Full Pay

		£		£	
SURGEON LIEUTENANT (short service and permanent service)	from	438	to	478	per annum.
SURGEON LIEUTENANT COMMANDER (promoted after six years service)	,	578	,	611	,,
SURGEON COMMANDER (promoted after a further six years' service)	,,	742	,,	1058½	,,
SURGEON CAPTAIN (promoted by selection)	,	1074	,,	1320	,
SURGEON REAR ADMIRAL (promoted by selection)		1734			,
MEDICAL DIRECTOR-GENERAL		2262½			,,

Allowances

An outfit allowance of £50 towards cost of uniform is given

Allowances when in charge of hospitals and sick quarters	10*s*. and 5*s* per diem
Eighty five Specialist allowances of	5*s* per diem.
Allowances to Senior Medical Officers in flagships	5*s* and 2*s* 6*d* per diem.

Provision allowance and lodging allowance are paid when victualling and accommodation are not provided.

The extra allowances alluded to in this Table are not to be looked upon as very exceptional About a quarter of the medical officers of the Navy are drawing extra allowances

PENSION

Naval Officers retire at certain ages according to the rank they have attained Except for those promoted to the 40 higher posts, the usual retiring age is 55 as Surgeon Commander, the appropriate pension according to scale being £543 per annum.

The current scale of pensions is as follows —

	Maximum retired pay			
SURGEON VICE ADMIRAL	£1082 per annum on vacating office			
SURGEON REAR ADMIRAL	£914½	per annum	at age of	60
SURGEON CAPTAIN	£814½	,,	,	57
SURGEON COMMANDER	£543	,,	,,	55
SURGEON LIEUTENANT COMMANDER AND SURGEON LIEUTENANT	£407½	,	,,	45

Officers permitted to withdraw receive gratuities on the following scale —

	£
Over 10 and under 15 years service	500
, 15 ,, 18 ,, ,	1800
, 18 years service	2700

CANDIDATES

Candidates will be required to present themselves before a Selection Board at the Admiralty presided over by the Medical Director General of the Navy, to whom application should be made for further details

Dental Branch

Candidates, who must be qualified dental surgeons and below the age of 28 years, are required to produce certificates of birth, registration, and of character They must be medically fit for active service anywhere

Dental officers are appointed for short service (six years) in the first instance, but may be transferred to the permanent list at the discretion of the

Admiralty On withdrawal at the termination of their short service engagement officers will receive a gratuity of £1000 An outfit allowance of £50 is payable on joining

Officers selected for the permanent list will normally be promoted to Surgeon Lieutenant-Commander (D) on transfer unless previously promoted as short service officers in consequence of an antedate of seniority Promotions to Surgeon Commander (D) (Establishment 15) and to Surgeon Captain (D) (Establishment 4) are made by selection. The total establishment is at present 112

An antedate of seniority not exceeding six months may be allowed to officers who held suitable appointments in civil hospitals prior to entry into the service such time counting for the purpose of (a) seniority (b) increments of pay and (c) promotion to the rank of Surgeon Lieutenant-Commander (D) but for no other purpose.

Provision has been made for candidates who, at the time of entry hold or who are about to hold, an appointment as dental officer in a recognised civil hospital, to serve in such appointment provided the period of service after entry does not exceed six months. The time will be allowed to count as indicated above but pay is not allowed during the period. It will count as service for the purposes of retired pay or gratuity on retirement or withdrawal however in the case of officers transferred to the permanent list

Provision is made for post-graduate courses to dental officers after eight years service.

The rates of full pay for dental officers are as follows —

	£ £
Surgeon Lieutenant (D)	363–447
Surgeon Lieutenant-Commander (D)	535–660
Surgeon Commander (D)	703–900
Surgeon Captain (D)	1031–1281

Further particulars including rates of retired pay and withdrawal gratuities, can be obtained by application to the Medical Director-General of the Navy Admiralty S W 1

ARMY MEDICAL SERVICES

Royal Army Medical Corps

THE appointment of officers to the Royal Army Medical Corps will in the first instance be by means of a short service commission for a period of five years During his fourth year of service an officer will have the opportunity of applying for a permanent commission in the Royal Army Medical Corps or the Indian Medical Service, or of retiring on completion of five years service with a gratuity of £1000 Those retiring with a gratuity after five years' service will be liable to be called up for duty in the event of a national emergency arising during the 12 years following their retirement

New entrants are commissioned in the rank of Lieutenant and the first three months of their service are on probation during which time they undergo a course at the Royal Army Medical College in London, in hygiene tropical medicine entomology &c in addition to their military training at the R.A.M.C depôt at Aldershot A grant of £50 is made for the purchase of uniform.

A candidate for a commission in the R.A.M.C who is holding or who is about to hold an approved whole-time appointment at a recognised civil hospital may be granted a commission and seconded while holding his hospital appointment up to a maximum period of 12 months. While so seconded he will continue to hold his commission in the R.A.M.C but will not receive army pay and allowances. The period of secondment will however count as army service as explained below A candidate who has held an approved whole-time hospital appointment within six months of entry may be granted an antedate not exceeding 12 months in respect of the period the appointment was held. The period of secondment or antedate will not reckon in diminution of the period of five years which he is required to serve on a short service commission, but on completing one year of actual service in the R.A.M C the period of secondment or antedate will count for seniority

If appointed to a permanent commission the period of secondment or antedate will count as service for promotion to the rank of Major increases of pay in the ranks of Captain and Major, and retirement on retired pay or with gratuity

PROMOTION

Promotion to Captain will be after one year's commissioned service on full pay If appointed to a permanent commission promotion to the rank of Major will be on completion of 10 years commissioned service. Promotion to the ranks of Lieutenant-Colonel and Colonel will be by selection to fill vacancies within the establishment which is designed to allow promotion to those ranks on the average after 17 and 26 years service respectively

PROFESSIONAL OPPORTUNITY

The possibilities for good work are very great. There is scope for original research in tropical diseases in preventive medicine, and in bacteriology as well as in the large clinical field open to the specialist in medicine, surgery, gynæcology diseases of the ear, nose and throat, ophthalmology and venereal diseases Child welfare is also undertaken systematically by officers of the R.A.M.C Young officers having special qualifications or experience in particular branches of medicine or surgery can if found sufficiently expert be graded as physician otologist gynæcologist &c They would then be eligible to fill specialist appointments

FOREIGN SERVICE

The tour of foreign service in India, Burma and Egypt is five years, in Gibraltar and Malta four years and in other stations three years, but in the case of those officers retiring on a gratuity after five years service arrangements would be made for them to return to England at public expense by the end of that period.

POST-GRADUATE STUDY

A permanent commissioned officer will, between his sixth and tenth year of service undergo a course of post-graduate study at the Royal Army Medical College and the London hospitals of five months duration followed by a course of study of a special subject selected by himself, provided he has shown special aptitude in the post-graduate course or during his previous service. During this course of study he remains on full pay and the fees for the course are paid by the State.

When qualified in his special subject, the officer up to and including the rank of Lieutenant-Colonel becomes entitled to specialist pay at 4*s* 6*d* per day when holding a specialist appointment.

PAY AND ALLOWANCES (HOME RATES)

The rates of pay and allowances for officers are at present as shown in the Table, but the allowance rates vary slightly from time to time. In addition, specialist pay and charge pay are given under certain conditions as noted below

ADDITIONAL PAY

An officer below the substantive rank of Colonel holding an appointment as specialist receives 4*s* 6*d*. a day in addition to his ordinary pay

TABLE SHOWING PAY AND ALLOWANCES (HOME RATES)

Appointment	Pay *	Rations †	Servant.	Married ‡ Lodging	Married ‡ Fuel and light (average)	Married ‡ Furniture allowance	Unmarried Lodging	Unmarried Fuel and light (average)	Approximate total per annum Married	Approximate total per annum Unmarried
	A day £ s d	A day s d	A day s d	A day s d	A day s d	A day s d	A day s d	A day s d	£	£
Lieutenant	0 19 10	1 8	2 0	3 6	1 8	2 0	2 6	0 8	570	487
Captain	1 4 6	1 8	2 0	4 6	2 9	2 0	2 6	0 8	683	572
After 6 years' service	1 7 2	1 8	2 0	4 6	2 9	2 0	2 6	0 8	732	620
,, 8 ,, ,,	1 9 4	1 8	2 0	4 6	2 9	2 0	2 6	0 8	770	660
Major	1 14 0	1 8	2 0	4 6	2 11	2 0	4 0	1 4	859	785
After 13 years' service	1 18 6	1 8	2 0	4 6	2 11	2 0	4 0	1 4	941	867
,, 16 ,, ,,	2 0 8	1 8	2 0	4 6	2 11	2 0	4 0	1 4	981	906
,, 18 ,, ,,	2 5 4	1 8	2 0	4 6	2 11	2 0	4 0	1 4	1060	99[illegible]
,, 22 ,, ,,	2 8 10	1 8	2 0	4 6	2 11	2 0	4 0	1 4	1130	1055
Lieutenant-Colonel	2 12 0	1 8	2 0	4 6	3 0	2 0	4 6	2 4	1189	1141
After 3 years service as such	2 16 6	1 8	2 0	4 6	3 0	2 0	4 6	2 4	1271	1223
Colonel	3 3 4	1 8	2 0	5 6	3 11	2 0	5 6	2 9	1431	1373
Major General	4 6 0	1 8	4 0	11 0	5 0	2 0	11 0	3 10	2001	1944
Director General	5 8 8	1 8	6 0	13 9	5 7	2 0	13 9	4 5	2512	2455

* The rates of pay shown in the above Table are the rates issuable with effect from July 1st, 1936

† These rates apply when rations cannot be issued in kind

‡ A married officer for the purposes of furniture, lodging, fuel and light allowances is one who is married and is 30 years of age or over

CHARGE PAY

	Daily s d
(a) An officer below the substantive rank of Colonel in charge of a hospital of 50 beds and over, or in charge of a medical or surgical division of a general hospital with at least 300 beds	5 0
(b) Senior Medical Officer, Royal Arsenal	5 0

Assistant professors at the Royal Army Medical College (Lieutenant-Colonels) receive pay and allowances of their rank plus £90 10s a year

GRATUITIES SHORT SERVICE OFFICERS

The gratuity of £1000, free of income tax, granted on retirement, after five years' service as a medical officer, to a short service officer who does not obtain a permanent commission is generous, and should go a long way towards enabling an officer on leaving the Service to establish himself in civil life

Entry takes place twice yearly at the beginning of May and November

Regulations for admission, giving full details and application forms, should be obtained from the Assistant Director General, Army Medical Services (A.M D 1), The War Office, Whitehall, London, S W 1.

RETIREMENT AND RETIRED PAY OFFICERS HOLDING PERMANENT COMMISSIONS

The following are the rates of retired pay —

1 Retired pay consists of two parts (a) a service element based on the officer's total service, (b) a rank element for the rank from which the officer retires An officer with less than 20 complete years' service will not be eligible to retire voluntarily on service retired pay

2 The scale will be as follows —

(a) Service element —£13 11s 6d for each completed year of service as a medical officer

(b) Rank element —

Rank from which retired	After completing 1 year's service in the rank	After completing each additional year's service	Maximum rank element.
	£ s d	£ s d	£ s d
Major	10 17 3	10 17 3	108 12 6
Lieutenant-Colonel	135 15 0	27 3 0	217 4 0
Colonel	263 9 0	45 5 0	352 19 0
Major General	398 4 0	45 5 0	488 14 0
Lieutenant-General	533 19 0	45 5 0	624 9 0

The retired pay of an officer retiring with less than one complete year's service in the rank from which he retires will be assessed as though he had retired from the rank below

Maximum rates of retired pay (a) and (b) together —

	£ s d.
Major	407 5 0
Lieutenant-Colonel	543 0 0
Colonel	724 0 0
Major General	905 0 0
Lieutenant-General	1086 0 0

3 Officers may be permitted to retire with a gratuity in accordance with the following scale :—

With 5 and less than 10 years' service as a medical officer	£1000
After 10 years' service as a medical officer	£1500
,, 15 ,, ,, ,, ,,	£2800
,, 18 ,, ,, ,, ,,	£3500

The Army Dental Corps

This Corps is administered by the Director General, Army Medical Services, who is assisted by the Director, Army Dental Services Regulations for admission to the Army Dental Corps should be obtained from the Under-Secretary of State, War Office, and carefully studied

OFFICERS APPOINTMENT AND PROMOTION

1 The appointment of officers to the Army Dental Corps will, in the first instance, be by means of a short service commission for a period of six years. In the sixth year an officer will be given the choice of retiring with a gratuity of £1000 or of applying for a permanent commission Those retiring with a gratuity after six years' service will be liable to be called up for duty in the event of a national emergency during the 12 years following their retirement

2 New entrants, who must be duly qualified under regulations approved by the Army Council, are commissioned in the rank of Lieutenant

3 A candidate for a commission in the Army Dental Corps who is holding or who is about to hold an approved whole-time appointment in a recognised civil hospital may be granted a commission and seconded while holding his hospital appointment for a period not exceeding six months While so seconded he will continue to hold his commission in the Army Dental Corps, but will not receive army pay

or allowances. The period of secondment will however count as army service as stated below A candidate who has held an approved whole-time appointment in a recognised civil dental hospital or in the dental department of a recognised civil general hospital may be granted an antedate covering the period of his appointment but not exceeding six months provided that the interval between the termination of the hospital appointment and the date of entry into the Service does not ordinarily exceed six months The period of secondment or antedate in respect of a hospital appointment will not reckon in diminution of the period of six years which he is required to serve on a short service commission, but on completing one year of actual service in the Army Dental Corps it will count for seniority The period of secondment or antedate will also count for increment of pay dependent upon length of service and, after appointment to a permanent commission will count for promotion to the rank of Major and towards retirement on retired pay or with gratuity

4 An officer is eligible for promotion to Captain after one year's service and to Major after ten years service in the Corps provided he has qualified in such manner as may be prescribed by the Army Council Promotion to the ranks of Lieutenant-Colonel and Colonel to fill the establishments laid down from time to time for those ranks, is made by selection from those senior in the rank below

The Director Army Dental Services may be a Major-General

The rates of pay are slightly less than those of the Royal Army Medical Corps, the difference varying from 1s 8*d* in the rank of Lieutenant to 2s 2*d* in the rank of Colonel.

CHARGE PAY

The officer in charge of the Dental Laboratories Aldershot, receives charge pay at the rate of 5s a day if holding the rank of Captain or 2s 0*d*. a day if holding the rank of Major

ALLOWANCES

The allowances for officers of the Army Dental Corps are at the same rates as for officers of the Royal Army Medical Corps.

RETIREMENT AND RETIRED PAY OR GRATUITY

(1) The rates of retired pay will be the same as for officers of the Royal Army Medical Corps

(2) Voluntary retirement on retired pay will not be allowed until after 20 years service

(3) Earlier retirement on gratuity may be allowed:—

After 5 years	service as a Dental Officer	gratuity of £1000
10		£1250
15		£2250
18		£3000

The aim of the Corps is the prevention of wastage on account of dental disease or dental deficiency and to enable this to be carried out every recruit is inspected by a dental officer immediately after joining and all necessary treatment carried out The soldier is reinspected at least once a year and the dental efficiency maintained at the best standard possible

INDIAN MEDICAL SERVICE

EUROPEAN OFFICERS

ADMISSION to the Service is by selection and nomination by the Secretary of State for India and applications should be made in writing to the secretary Military Department India Office London S W 1

Candidates should be under 32 years of age at the date of appointment and must possess a qualification registrable under the Medical Acts in force at the time of appointment The Indian Medical Service is designed primarily to meet the needs of the Indian Army but in order to maintain the necessary minimum war reserve of military medical officers, and to provide for European medical attendance for European officers of the Superior Civil Services and their families, provincial governments are required to employ a stated number of Indian Medical Service officers Certain posts under the Government of India are also reserved to members of the Indian Medical Service. It is a definite condition of service that officers will be liable to serve on either the civil or the military side On first appointment an officer is required to serve for a period in the military branch and will not normally be considered for appointment to the civil branch until he has done two years service, including at least one year in India Executive medical officers in both civil and military employment may attend persons unconnected with Government service provided their duty admits of it On the military side however, the opportunities for private practice are not great The commissions of officers who before appointment have obtained certain higher medical qualifications or have held approved whole-time appointments in a recognised civil hospital may be antedated in either case by one year or on the two counts combined by not more than 18 months

PROSPECTS

During the past two or three years the prospects of the Indian Medical Service have become brighter and those in touch with the realities of the situation are of opinion that the attractions of the Service are as great as ever for serious candidates, whether interested in a military career or with clinical preferences. There is scope for men who have specialised in medicine, surgery and midwifery and for those with an aptitude for research. The chief attraction perhaps is the variety of careers which the Service offers to its members. Pay and pensions are attractive and although junior officers who are married must expect to live quietly if they are to avoid exceeding their incomes, they have a great advantage over private practitioners in that they are automatically saving considerable sums of money in the shape of provision for a pension on retirement

After an exhaustive investigation it has now been decided that the civil side of the I.M S must be retained for the purpose of providing a war reserve of trained medical officers. It has also been ruled that a number of specialist and other appointments in civil are to be reserved for European officers of the Service with a view to providing medical aid by European doctors for European officers of the superior civil services and their families as well as a war reserve of European medical officers. These appointments include 21 senior and 10 junior specialist posts under provincial governments and 84 civil surgeoncies and other professional posts under the central government the crown representative and provincial governments There are 24 further posts open to Indian and European officers including 12 medical research appointments. Highly qualified men have therefore a good chance of securing congenial civil appointments after a period of military service of varying duration The prospects of higher promotion on the military side have been improved.

Those who enter the Service at an early age have an advantage over those who delay till several years after qualification. The ideal course is to enter after spending a year in a resident hospital appointment subject to the approval of this appointment as qualifying for antedate the candidate can then enter the Service with the rank and pay of a captain.

A point often overlooked by young doctors is that the Indian Medical Service offers permanent commissions to European candidates, so that recruits can look forward with confidence to a settled career instead of experiencing the doubts and anxieties associated with temporary commissions The Service also offers all the advantages of the short-service system a European officer can retire after six years with a gratuity of £1000 or after twelve years service with one of £2500 But although many men have joined up with the intention of taking the gratuity very few have actually done so; it is reasonable to infer that the conditions of service prove attractive to the great majority of entrants Despite the changes which have been constantly occurring throughout the history of the Service, there has never been a time when men of ability and enterprise have been unable to carve out distinguished careers for themselves Whatever changes the future may bring, the time is remote when there will cease to be a demand for the best class of European doctor in India No other Service offers such a combination of financial security and varied professional opportunity There is little need to fear the risks to life and health in India, the death-rate among British troops which was 13 per mille in 1900 is now less than 2 5 per mille The distance of India is being diminished in a corresponding degree, it will soon be possible to travel from Karachi to London in less than three days Those who are interested in the Indian Medical Service should consult one of its junior members retired officers are now as ever prone to emphasise the goodness of the old days

RATES OF PAY

The monthly rates of pay for European officers of non-Asiatic domicile in the Service are as tabulated below The rupee, it may be remembered, is worth 1*s* 6*d*, and rupees per month may be easily converted into pounds per annum by multiplying by nine-tenth's

Officers on arrival in India will be posted to specially selected stations Officers in military employment, when in command or second-in-command of the larger station hospitals, receive special allowances On the civil side there are public health, bacteriological, research, and professional appointments carrying special enhanced rates Officers on appointment receive an outfit allowance of £75

Year of service.	Rank	Basic pay Rs per mensem	Overseas pay £ per month	Total £ per annum
1	Lieutenant	450	15	585
2	Captain	500	25	750
3–4	"	550	25	795
5	"	600	25	840
6	"	600	30	900
7–8	"	700	30	990
9–10	"	700	35	1050
11	Major	800	35	1140
12–15	"	800	40	1200
16–18	"	950	40	1335
19–20	"	1100	40	1470
21–23	Lieutenant-Colonel	1350	40	1695
24–25	"	1500	40	1830

NOTE.—(1) The rupee is at present stabilised at a rate equivalent to 1*s* 6*d*

(2) An officer promoted to the rank of Lieutenant-Colonel before completion of 20 years service will receive pay at the rate of Rs 1200 per mensem (basic) *plus* £40 per month overseas pay

(3) Overseas pay is admissible only in the case of officers who at the date of their appointment to the Indian Medical Service had their domicile elsewhere than in Asia. All service which counts for increments of basic pay counts also for overseas pay

NOTE TO TABLE

In addition to the above rates various allowances are admissible for a large number of special appointments on both the military and the civil side which may be held by members of the I M.S Special high rates of pay are also attached to the numerous administrative appointments open to officers in both branches of the Service The appointment of Director General I M.S which is held by an I M.S officer carries pay of Rs 3500 per mensem The appointment of Director of Medical Services in India carrying pay at Rs 3200 per mensem may also be held by an officer of the Indian Medical Service

PENSIONS AND ALLOWANCES

The rates of pensions, as from July 1st, 1935, are as shown in the Table below

Service	Rates per annum	Service	Rates per annum
After 17 years	£372	After 23 years	£576/10/
18	400	24 "	614
19	428	25 "	651
20	465	26	697/10/
21	502	27	744
22	539/10/		

There are additional pensions ranging from £65 to £350 per annum for officers who have held high administrative appointments

Officers on appointment are provided with free passage to India normally by transport The wives and families of officers who are married prior to the date of the officers' embarkation on first appointment will also be given free passage to India subject to the payment of messing charges Officers are granted a certain number of return passages home for themselves, their wives and children at Government expense during their career There are special allowances for officers whilst on study leave

Further particulars can be obtained on application to the Secretary, Military Department, India Office, Whitehall, London, S W 1 Letters should be marked "Recruitment for I M S"

MEDICAL BRANCH OF THE ROYAL AIR FORCE

THE Air Council attach great importance to attracting into the service the best type of medical man, since on the capacity of the Medical Branch depends in a peculiar degree the safety and efficiency of the Air Force The duties of a medical officer in the Air Force include not only the prevention and treatment of those ordinary diseases to which the personnel of any fighting service are liable, but the special study of the mental and physical stresses imposed on the airman in diverse circumstances and climates—a new branch of medicine which still provides considerable scope for research.

As promotion to the higher ranks of the Service is by selection, and as a certain proportion of the higher ranks are reserved for purely professional as opposed to administrative appointments it will be seen that there are excellent prospects for the young medical officer who exhibits ability and energy in his professional work

The work to be done, therefore, has a high professional interest combined with good rates of pay and allowances, so that a career is offered, to those who are selected for a permanent commission, which should prove both attractive and interesting The life is one which is certain to appeal to the man of wide outlook who desires opportunities for travel, sport, and games, and can find interest and enjoyment in aviation

His duties will, as a matter of course, give him flying experience as a passenger, which is necessary for the proper study of the medical problems of aviation and for gaining first-hand knowledge of the conditions under which his comrades serve He may also, if he wishes, learn to fly, when this can be arranged without interference with his duties

The establishment consists partly of permanent and partly of short service officers, and an officer on entry is granted a short service commission for a period of three years on the active list (which may be extended to five years) and of four years in the Reserve of Air Force Officers Selections for permanent commissions are made from officers holding short service commissions who are considered to be suitable and who desire a life career in the Service Those who are not selected are transferred to the Reserve at the expiration of their period of service on the active list

But the short service commission with its gratuity after three or five years is in itself an attraction to many entrants who desire to enlarge their experience and outlook from the point of view of subsequently entering private practice, and who, on entry, have not made up their minds to the adoption of a permanent career in the Service

For certain purposes medical officers may be allowed to count as service their time spent in approved whole-time post-graduate appointments in civil hospitals under certain well-defined and generous conditions

At about five years service all permanent officers who are judged suitable will be given the opportunity to take a course of specialist study towards the expense of which an allowance is made The period allowed will vary with the subject of study but usually about nine months will be available to each officer during which full pay and allowances will be issued. Their subsequent career will normally be as follows Approximately three-quarters of the employment of squadron leaders and senior flight lieutenants is in specialist posts though these are not generally of a full time specialist character On reaching the rank of wing commander, the policy is to allow a proportion of officers to become permanent specialists and to be employed continuously throughout the remainder of their career in full time specialist posts. In addition there are a number of hygiene posts in the rank of wing commander open to specialists in that subject thus further increasing the proportion of specialist posts open to officers. In the rank of group captain apart from the post already mentioned as available for the permanent specialist employment is nearly equally divided between posts in charge of a large hospital and head quarter administrative posts. This statement indicates the position as regards specialist employment as at present foreseen.

New entrants into the Royal Air Force Medical Branch are commissioned as Flying Officers (Medical), and are eligible for promotion to the rank of Flight Lieutenant (Medical) after one year s service on full pay Accelerated promotion to the rank of Squadron Leader may be granted at any time after the completion of eight years service to officers qualified to hold specialist appointments; those officers who are not so qualified will be eligible for promotion to this rank after ten years total service Promotion within establishment to the ranks of Wing Commander and above is by selection The number of permanent commissions granted yearly is regulated with a view to all suitable permanent officers being promoted to Wing Commanders and of a substantial proportion of Wing Commanders being promoted to Group Captains. While the aim is to give entrants a career as above no guarantee of promotion can be given to the individual officer of course since the number of vacancies for promotion must depend on the requirements of the Service from time to time

There is no competitive examination on entry candidates who must be under 28 years of age are interviewed by a Board presided over by the Director of Medical Services Royal Air Force before acceptance. Each candidate must produce —

1 Birth certificate 2 Medical registration certificate 3 A declaration containing the following information (*a*) Age and place of birth (*b*) That he is a British subject the son of British subjects and of pure European descent (*c*) That he is ready to engage for general service at home or abroad as required. (*d*) The qualifications he is possessed of and what medical or other appointments he has held (if any) (*e*) That he is willing to fly as a passenger whenever called upon to do so

Each candidate is required before acceptance, to pass a medical examination to ensure that he labours under no constitutional or mental disease or weakness, or any imperfection or disability which may interfere with the efficient discharge of the duties of a medical officer in any climate in peace or war

On appointment entrants undergo an initial course of three months during which they are given instruction in the special medical aspects of aviation, hygiene, and tropical medicine the organisation and administration of the Royal Air Force and the general and special duties to be performed by officers in the Medical Branch

EMOLUMENTS

The emoluments of medical officers of the Royal Air Force are given in outline below The rates of pay are fixed on an inclusive basis and the fact that specialist pay and charge pay are not payable as separate emoluments was taken into account when the rates were fixed

In addition to pay, officers receive quarters (with fuel and light) rations and attendance, or if these are not available in kind they are given cash allowances in lieu as shown in the Table The rates and general scheme of allowances are subject to review as circumstances may require Married officers who have attained the age of 30 years receive either married quarters or allowances at the married rates

Rank.	Pay (per annum)	Allowances (per annum) (Present Home Rates)	
		Married	Single
	£	£	£
Flying Officer	395	—	123
Flight Lieutenant	429	234	123
Ditto after 2 years as such	46	234	123
Ditto 4	496	234	123
Squadron Leader	646	237	162
Ditto, after 2 years as such	09	237	162
Ditto 4	742	237	162
Ditto 6	809	237	162
Wing Commander	909	230	190
Ditto after 2 years as such	913	239	190
Ditto, 4	1040	239	190
Group Captain	1156	310	252
Air Commodore	1320	366	319
Air Vice-Marshal	1053	430	373

Special allowances are applicable at stations abroad.

UNIFORM AND EQUIPMENT

An allowance of £50 towards the cost of uniform is made on joining to candidates who have not had previous commissioned service in H M Forces

LEAVE

Subject to the exigencies of the Service, officers at home are allowed ordinary leave up to sixty-one days in a year; officers abroad may accumulate leave up to 91 days which may be taken on return home Full pay is granted for ordinary and accumulated leave

Retired Pay

The minimum period of service qualifying for retirement on retired pay is 20 years.

The maximum rates of retired pay and the compulsory retiring ages for the several ranks are:—

Rank.	Yearly rate of retired pay		Compulsory retiring age
	£	s.	
Air Vice-Marshal	914	10	60
Air Commodore	860	0	59
Group Captain	814	10	57
Wing Commander	543	0	55
Squadron Leader	452	10	55

Officers of the rank of Group Captain and below can normally reach the maximum rate of retired pay of their rank.

Gratuities —A permanent officer allowed to retire before having qualified for retired pay may be granted a gratuity namely:—

£1000 if he has 5 but less than 10 years commissioned service
£1500 10 15
£2800 „ 15 or more than 15

Short service officers who complete their full period of service on the active list will normally be granted gratuity as follows on transfer to the Reserve —

After 3 completed years £400
5 „ £1000

These gratuities will not be payable to officers granted permanent commissions, but their service on a short service commission will count towards retired pay

DISABILITY AWARDS, WIDOWS' PENSIONS, &C

Permanent medical officers invalided from the Royal Air Force are eligible for retired pay or gratuity however short their service may have been If the disability in consequence of which they are invalided is attributable to the conditions of their service and is assessed at 20 per cent or more, they receive an addition, varying according to the degree of disablement, to the retired pay or gratuity for which they may be eligible Provision is also made in the regulations for pension to the widow and allowances to children or dependants of a deceased officer

GENERAL

The pay of officers even in the lowest rank is ample to enable them to be independent and the expenses of Air Force messes are strictly limited, in order to check all tendency to extravagance and to prevent even the most junior officer from finding difficulty in living on his pay The regulated limit of the daily rate of messing is 5*s* and the average rate at present charged at home stations is 3*s* 6*d* Subscriptions and the cost of mess entertainments are charged according to an officer's rate of pay, and an unmarried officer taking his full share in the life of the mess should not incur a mess bill of more than £10 a month (6*s* 8*d* a day) This sum would include a wine bill of £1 a month (an actual average figure) but would not include goods, such as tobacco, bought through the mess

COLONIAL MEDICAL SERVICE

THE Colonial Medical Service consists of the Medical Services in Bahamas, Barbados, Bermuda, British Guiana, British Honduras, British Solomon Islands Protectorate, Ceylon, Cyprus, Falkland Islands, Fiji, Gambia, Gibraltar, Gilbert and Ellice Islands Colony, Gold Coast, Hong-Kong, Jamaica, Kenya, Leeward Islands, Malaya, Mauritius, Nigeria, Northern Rhodesia, Nyasaland, Palestine, St Helena, Seychelles, Sierra Leone, Somaliland, Tanganyika, Trinidad, Uganda, Windward Islands, and Zanzibar

The various Colonial Government medical departments employ some 1200 European medical officers and about the same number of qualified Asiatic and African medical officers who are appointed locally Included in this total are about 40 qualified European women medical officers About 850 trained nursing sisters and health visitors are employed, most of whom are Europeans There are large numbers of subordinate personnel, sanitary inspectors, medical assistants, and dressers, most of whom are natives of the areas in which they serve

An officer in the Colonial Medical Service has opportunities for the practice of his profession, in general medicine and surgery as well as in the special branch of tropical medicine On joining a medical department his duties include medical, surgical, and public health work He may be posted to an outlying or bush station where he will be responsible for all the medical activities in connexion therewith, or he may be attached for duty at one of the large hospitals Every encouragement will be given him to pursue any specialist work in which he may be interested so far as the exigencies of the Service permit Great importance is attached to a candidate's post-graduate experience, as in the outlying districts he will frequently be called on to deal with emergencies without being able to seek the advice and assistance of his colleagues

VACANCIES

Vacancies for medical officers may occur at any time of the year, and are dealt with as circumstances require In normal circumstances vacancies occur most frequently in Tropical Africa and Malaya In the Bahamas, Barbados, Bermuda, Ceylon Jamaica, and Mauritius, junior posts are practically always filled by the appointment of qualified local candidates Appointments in Malta are filled locally The vacancies for which candidates are selected from outside the Service are generally those for ordinary medical officers Appointments for specialists are almost invariably reserved for officers who are already in the Service, and who have shown outstanding merit in a particular branch of medicine or surgery Under normal conditions about six vacancies were to be expected annually, usually in West Africa and in Malaya, for women medical officers

QUALIFICATIONS

Applicants must be fully qualified and British subjects of under 35 years of age, preference is given to candidates under 30 For certain appointments candidates must be of European parentage.

Preference will be given to applicants who have held hospital or public health appointments or who have special knowledge of anæsthetics, radiology, surgery, medicine, ophthalmology, gynæcology and midwifery, diseases of the ear, nose, and throat, venereal diseases, &c In the case of lady medical officers experience in maternity and child welfare is almost invariably essential

Selected candidates will normally be required to undergo a course of instruction at the London School of Hygiene and Tropical Medicine or at the Liverpool School of Tropical Medicine or at Edinburgh University before taking up their appointments The cost of tuition will be paid by the Government, but candidates must make their own arrangements for board and lodging An allowance of £25 a month will be paid to them monthly in arrear while they are under instruction Candidates who are successful in obtaining the diploma in tropical medicine and hygiene of London, Liverpool, or Edinburgh are granted a refund of their examination fees If an officer has not taken a course of instruction in tropical medicine prior to appointment, he is usually required to take one during his first leave of absence and to obtain a satisfactory certificate before he can be confirmed in his appointment

GENERAL CONDITIONS OF SERVICE

New entrants to the Service will be liable to transfer to any scheduled post therein, whether or not such transfer represents promotion, provided that

(*a*) No officer whose first appointment is to an office in a Dependency in which he was ordinarily resident at the time of appointment shall be liable to be transferred to an office outside that Dependency unless and until he shall have accepted an office in another Dependency

(*b*) No officer shall be transferred without his own consent to an office which in the opinion of the Secretary of State is of less value (due regard being had to climate and other circumstances) than that which he already holds

Officers who do not hold scheduled posts are eligible to apply for transfer to such posts Appointment confirmation, promotion, retirement, and transfer of medical officers will be governed by the directions of the Secretary of State

No officer of the Service is entitled, as of right, to private practice, the Service being envisaged as essentially a Service of whole time officials whose primary duty is to the State

The actual value of an appointment may be much greater than is indicated by the salary alone An applicant should take into consideration whether the post is pensionable, whether free quarters are provided, whether any special local allowances are payable, whether free passages are provided on first appointment and when proceeding on leave, and whether free or assisted passages are provided for the wives and children of married officers If local income-tax exists in a colony it is much lower than that payable at home

The majority of appointments are pensionable. Officers appointed to pensionable posts serve on probation in the first instance the probationary period varying in different services—e g two years in East Africa three years in West Africa and Malaya Some appointments are temporary and service in these does not qualify for pension unless the appointment is subsequently made pensionable

Information as to the conditions and cost of living in the colonies protectorates, and mandated territories is contained in a publication of that title (Colonial No 101) which may be obtained from H.M. Stationery Office, price 3s Further information as to the staffs, the climate, and local conditions will be found in the Dominions Office and Colonial Office List. Leaflets concerning nearly all the tropical dependencies are issued for the use of intending settlers and others by the Oversea Settlement Department, Dominions Office, Caxton House, Tothill-street, London, S W 1 A memorandum on Medical Appointments issued by the Colonial Office will be sent without charge on application to the Director of Recruitment.

Applications for medical appointments in the Colonial Service should be addressed to the Director of Recruitment (Colonial Service) Colonial Office 2 Richmond terrace, Whitehall London S W 1

PARTICULAR CONDITIONS OF SERVICE

Tropical Africa

EAST AFRICA

Selected candidates are appointed as medical officers on probation in the first instance for two years at the end of which period their appointments are made permanent if their service has been satisfactory and a native language test has been passed Later on a special course of study must be taken while on leave Candidates can generally take their wives with them on first appointment, though in certain cases the sanction of the Governor must first be obtained.

Officers are provided with quarters free of rent or the Government may provide temporary accommodation, or an allowance in lieu of quarters may be paid The salary of a medical or health officer is £600 per annum rising by annual increments of £30 to £840 and thence by increments of £40 to £920, subject to an efficiency bar at £840 Senior medical officers and senior health officers are paid on the scale £1000 by annual increments of £50 to £1100

Officers appointed to any East African Dependency excepting Northern Rhodesia are permitted to retire with gratuity, if they wish instead of waiting to retire on pension as follows (*a*) after nine years' service of which at least six must have been spent in East Africa £1000 ; (*b*) after twelve years service, of which at least eight must have been spent in East Africa, £1250 If an officer elects to retire with gratuity he thereby forgoes all claim to pension.

The highest grades and salaries in the medical departments are as follows —

Kenya Uganda, and the Tanganyika Territory—Director of Medical Services, £1500 Deputy Director of Medical Services £1200

Nyasaland—Director of Medical Services £1300

Zanzibar—Director of Medical Services, £1300 ; Senior Medical Officer £1000–£50–£1100

Northern Rhodesia—Director of Medical Services £1300 Senior Medical Officer £1000–£50–£1100

Somaliland—Senior Medical Officer £1000

There are also the following posts Medical Superintendent and Principal of Medical School Mulago Hospital (Uganda) £1100 Sleeping Sickness Officer (Tanganyika Territory) £1000–£50–£1100 ; Senior Pathologists (Kenya Uganda, and Tanganyika Territory), £1000–£50–£1100 ; Medical and Surgical Specialists £1000–£50–£1100 Health officers are selected from the ranks of medical officers as occasion arises

Free first-class passages are provided for the officer on first appointment, and on leave, and in certain cases assistance towards family passages is given

Pensions—Officers on the pensionable establishment may retire on attaining the age of 55 years Earlier retirement in the event of ill health is also provided for Pensions are calculated at the rate of one six hundredth of pensionable emoluments—i e salary and value of free quarters—in respect of each month s pensionable service at the time of retirement, subject in certain cases to an average of emoluments for the last three years before retirement.

WEST AFRICA

Officers hold their appointments in the first instance on probation for three years from the date of their first arrival After being placed on the permanent establishment this period is counted for pension Officers are not allowed to take their wives and young children out with them without the sanction of the Governor When as is usually the case an officer has obtained permission to be accompanied by his wife a grant of one-half the cost of his wife s passage to and from West Africa is made subject to certain conditions

Leave—European officers in West Africa may be granted vacation leave on full salary not exceeding in all one week s leave in the United Kingdom for every completed calendar month of total residential service in West Africa, plus the time necessarily taken on the journey to the United Kingdom and, if the officer is returning to West Africa for further service, the time necessarily taken on the journey from the United Kingdom to the Colony Vacation leave may be granted without any special grounds after 18 consecutive calendar months of residential service in West Africa. An officer will not be required to serve a tour of more than 24 consecutive calendar months residential service except in special circumstances and the Governor may grant vacation leave to any officer at any time after he has completed 12 consecutive calendar months residential service Within the above limits, the actual length of each officer s tour will be at the discretion of the Governor Vacation leave on full salary may also be granted to an officer if he is invalided from West Africa after less than 12 consecutive calendar months residential service and sick leave on full salary may be granted for any period not exceeding six calendar months. In addition local leave may be granted up to 27 days in any one tour

The scale of salaries of the officers of the Medical Department Nigeria is as follows —

Appointment.	Salary
Director Medical Services	£2000
Deputy Director Medical Service Deputy Director Health Service	£1700
Senior Specialist	£1600
Specialist	£1300
Assistant Director Medical Service	£1400
Senior Medical (or Health) Officer Senior Pathologist Principal Medical School	£1200
Medical Officer	£660 –£600–£30–£840–£40–£1000

For three years.

The highest grades and salaries in the other West African medical departments are as follows —

The Gambia.—Senior Medical Officer £1200 plus £150 staff pay

Sierra Leone—Director Medical Service, £1600 Assistant Director Health Service £1400 Specialist,

£1300 (or Senior Specialist, £1500), Senior Medical Officer, £1200

The Gold Coast—Director, Medical Service, £1800, Deputy Director, Medical Service, £1600, Deputy Director, Health Service, £1600, Assistant Director, Medical Service, £1400, Specialist, £1300 (or Senior Specialist, £1500), Senior Medical (or Health) Officer, £1200

The salary of a medical officer is at the rate of £660 a year for three years, then on confirmation £690 a year, rising by annual increments of £30 to £840 a year Then, subject to passing an efficiency bar, £880 a year, rising by £40 to £1000 a year Before passing £840 medical officers may be required to take a special course of study, and approval for passing the bar may be withheld if they do not obtain satisfactory certificates at the end of the course

Health Officers and Pathologists—Suitably qualified medical officers may be selected for health duties They will remain on the rate and scale of salary applicable to them at the time, additional staff pay of £150 will be granted to them There are a number of appointments for pathologists in Nigeria and the Gold Coast The method of selection, salaries, and other conditions attached to these appointments are similar to those of medical officers selected for health duties

African Medical Officers—There are a number of Government appointments for African medical officers in the West African Colonies These appointments carry a salary on the scales of £500–£25–£600 and £600–£30–£720 In addition, in Nigeria and on the Gold Coast, arrangements have been made for the employment of a few young African medical men temporarily on the hospital staffs, with a view to appointment to the Government service later, if suitable In such cases a salary of £400 a year is paid

Eastern Colonies and Protectorates

MALAYA

Medical officers are appointed on the following scale of salaries £700, rising to £770 during three years' probation, then, if they are placed on the pensionable establishment, rising to £805, and thence by annual increments of £35 to £1120, with a strict efficiency bar at £840

Above the concluding figure of £1120 there are certain higher appointments, as follows Director of Medical Services, Straits Settlements, £1890, Deputy Director, Straits Settlements, £1540, Director, Institute for Medical Research, Federated Malay States, and Principal, King Edward VII College of Medicine, Singapore, £1540 each, some posts at £1470, and some posts at £1190, rising annually by £42 to £1400 Salaries are paid in dollars at 2*s* 4*d*

Information about general conditions in Malaya is obtainable from the Malayan Information Agency 57, Charing Cross, London, S W 1

Leave—Eight months' full-pay leave is normally granted (*a*) after a tour of four years' resident service during the first eight years of resident service, (*b*) after a tour of three years' resident service during the next six years of resident service, (*c*) after a tour of two and a half years' resident service after 14 years' resident service Additional leave on half-pay may be granted on special grounds Officers are provided with free passages on first appointment for themselves and their families (i e, wife and children) up to five persons, inclusive of the officer On completion of each full tour, free return passages are given to all officers (with wife and children under the age of 10)

HONG-KONG

Officers are appointed on probation for three years A diploma of public health is required for appointment as a health officer The scale of salaries of the medical department is Director of Medical Services, £1650, Deputy Director, £1300–£50–£1400, Senior Medical Officer and Senior Health Officer, £1200–£40–£1280, Malariologist, Port Health Officer, Bacteriologist, each £920–£40–£1280, Health Officers, £860–£40 and one of £20 to £1280, Assistant Bacteriologist, Radiologist, each £800–£40–£1220, Medical Officers and Second Port Health Officer, £700–£40–£1180 The currency of Hong-Kong is the Hong Kong dollar which has no fixed exchange value with sterling For purposes of local payment salaries fixed in sterling are at present converted into Hong-Kong dollars at rates fixed from time to time If furnished quarters are provided a rental of 7 per cent on salary is charged In certain instances a rent allowance is paid instead

West Indian Colonies

Jamaica—District Medical Officers, if on a whole-time basis, draw £600–£25–£800 with travelling allowance and unfurnished quarters or an allowance in lieu The Public Hospital, Kingston, has a staff of seven, the Senior Medical Officer drawing £700–£50–£800 The chief post in the colony is that of Director of Medical Services, £1000–£50–£1200 Whole-time officers are not allowed private practice but in certain specified districts consulting practice is allowed. The age for voluntary retirement is 60 Pension is reckoned at the rate of 1-720th of pensionable emoluments for each month of service

Trinidad and Tobago—In Trinidad and Tobago Government Medical Officers receive salary at the rate of £400 per annum, rising by annual increments of £25 to £600 The chief posts are Director, £1300, Deputy Director £1100, Medical Superintendent, Colonial Hospital, £1100, and Government Pathologist, £1000 An officer appointed to a district receives, in addition to his salary, a travelling allowance varying from £100 per annum in a normal district to £150 per annum, and is allowed private practice, for which there is good scope Officers employed in institution work receive a duty allowance varying from £50 to £300 Medical officers having completed 10 years' resident service are pensionable at the age of 55

Windward Islands (Grenada, St Lucia, St Vincent) The Senior Medical Officer, Grenada receives £750 The Senior Medical Officer, St Lucia, receives £600–£25–£700, the post is pensionable, but private practice is not allowed except as a consultant The Senior Medical Officer, St Vincent, receives £500–£600 Most of the remaining appointments are district appointments with the right to private practice attached, the salaries paid by Government are, in Grenada, on the scale £500–£600, in St Lucia, £400–£500, in St Vincent, £400–£450 The Governor has the power to transfer a medical officer from one island to another Appointments are pensionable

Leeward Islands (Antigua, St Christopher and Nevis, Dominica, Montserrat, Virgin Islands)—The appointments are similar in number and character to those in the Windward Islands, and are pensionable An officer when first sent out is not appointed to a particular island but to the service of the Leeward Islands, with a salary of £350, and is later appointed to a definite district at a salary varying from £312 to £400–£25–£450, and the Governor decides as to the district which is to be allotted to him

British Guiana—There are the following appointments in the Medical Service of the Colony Director of Medical Services, £1000–£1200 per annum, with consulting practice, Surgeon Specialist, Georgetown, £1100, Bacteriologist £700, Medical Superintendent, Leprosy Hospital, £700, Medical Officers, £500–£25–£700 Most of the senior posts in institutions carry duty allowances (varying from £50 to £300 per annum) and quarters

British Honduras—The salary of an Assistant Medical Officer is £500–£25–£650 The Senior Medical Officer draws £1000

In British Guiana, Jamaica and Trinidad officers are allowed to accumulate full pay leave (at the rate of six weeks for each year s service) up to six months, and no leave of absence may (except in very special circumstances) exceed six months in all unless the officer has served for five years or more without leave in which case two months on half-pay may be taken in addition to six months full pay leave

Western Pacific

Fiji—The Director of Medical Services receives £1000–£50–£1100, with free unfurnished quarters, the Medical Superintendent Colonial War Memorial Hospital £800–£35–£1000 and free quarters the Medical Superintendent Leper Asylum £500–£25–£725 with partly furnished quarters the Medical Officer of Health £750–£25–£900 District Medical Officers receive £500–£25–£725 with partly furnished quarters or £50 house allowance at the option of the Government. A revision of salaries in Fiji is under consideration.

Western Pacific—The staff in the British Solomon Islands Protectorate consists of a Senior Medical Officer, £700–£50–£900 with partly furnished quarters and a local allowance of £50, one Travelling Medical Officer and two District Medical Officers £550–£25–£650, with partly furnished quarters a local allowance of £50 and a consolidated travelling and subsistence allowance of £200

In the Gilbert and Ellice Islands Colony there is a Senior Medical Officer £650–£25–£750; partly furnished quarters are provided and one Medical Officer at £600–£25–£650; partly furnished quarters are provided

Mediterranean Colonies

Cyprus—There is a Director of Medical Services, £1000; District Medical Officers, £500–£20–£700 The Surgeon Specialist, £600–£25–£750 is allowed consulting practice

Gibraltar—The Senior Medical Officer receives £1000 There are two Medical Officers, at £600–£30–£720 Both are allowed consulting practice only Free unfurnished quarters are provided

Island Group

Falkland Islands—The Senior Medical Officer is paid at the rate of £800 per annum, with free furnished quarters and £200 in lieu of private practice Two medical officers receive £600–£20–£700, with quarters at nominal rent Private practice is not allowed.

Seychelles—The Senior Medical Officer receives £525 and the Resident Surgeon £450 per annum, with quarters There are two Assistant Medical Officers, one receiving £450 the other £225 per annum paid in rupees Private practice is allowed

St Helena—The Senior Medical Officer receives £550 Private practice is allowed There is a second Medical Officer at £500

Middle East

Palestine—The grades and salaries of higher appointments in the Department of Health are Director of Medical Services £1200 plus £200 expatriation allowance two Deputy Directors £850–£50–£1100 plus £150 expatriation allowance Specialist Surgeon and Senior Medical Officers, £800–£25–£1000 plus £100 expatriation allowance Payment is in Palestinian pounds now/equal to sterling The remainder of the staff is recruited locally Three months leave with full pay can be taken every two years Most of the senior appointments are pensionable.

APPOINTMENTS NOT WITHIN THE COLONIAL SERVICE

Appointments in the self-governing Dominions and the territories administered by them—viz, Canada the Commonwealth of Australia (including Papua Norfolk Island, and the mandated territory of New Guinea) New Zealand (including the Cook Islands and the mandated territory of Samoa), the Union of South Africa (including the mandated territory of South West Africa), and the Irish Free State—are entirely under the control of the respective Dominion Governments For information with regard to them application should be made to the High Commissioners or Agents General in London

Sudan Medical Service

This service is responsible for carrying out civil and military medical and public health duties in the Sudan

The staff consists of: (*a*) A director (*b*) A senior physician and a senior surgeon to the Khartoum Civil Hospital (*c*) An assistant director (*d*) Medical officer of health Khartoum Province (*e*) A number of (at present 32) British senior medical inspectors and medical inspectors whose pay commences at £E 720 and rises, subject to the recommendation of the director by five biennial increases to £E 1080, and after 18 years service to £E 1200 All rates of pay are subject to an abatement of 7½ per cent The senior medical inspectors are eligible by selection for the senior posts All medical inspectors are appointed in the first place, on probation for two years, and if at the end of that time they are accepted for permanent service under the Sudan Government, the first increase of pay is subject to their passing an examination in Arabic

In addition to the above there are (*f*) a number of medical officers trained at one of the Syrian medical schools and (*g*) Sudanese medical officers trained at the school of medicine at Khartoum There are several native (*h*) assistant medical officers who have been given a purely practical training in one of the larger hospitals in the Sudan

Amongst the attractions of the service are the great *variety of the work* met with among many different races of the Sudan; *leave* of 90 days generally granted every year after the first 18 months of service; *study-leave* which may be given for some definite purpose The terms of the Pension and Provident Fund are detailed in the pamphlet of Information for Candidates of the Sudan Medical Service and should be studied in the original Private practice is allowed but is limited to a few of the larger towns, and may be carried on so long as it does not interfere in any way with official duties These duties include acting as consultant to the principal hospitals and the supervision of medical and public health work, the inspection of schools the examination of candidates for Government service and pension and the training of assistant medical officers and native sanitary overseers. The Khartoum Medical School is staffed mainly by members of the medical service who receive additional remuneration for their work as teachers. A registrar of the medical school is also selected from the service who receives £E.250 a year extra pay

Inquiries for further information should be made to the Deans of the Principal Medical Schools, and to Dr V S Hodson 60 Harley-street, W

Southern Rhodesia—Appointments are under the control of the Government of Southern Rhodesia Information from the High Commissioner 429 Strand London W C.2

North Borneo—Application to the British North Borneo Company Staple Hall Stonehouse-court, Bishopsgate, E C.3

Sarawak.—Appointments are in the hands of H. H. the Rajah. Information from the Sarawak Government Offices, 2, Millbank, London, S.W. 1.

Basutoland, Swaziland, and the Bechuanaland Protectorate.—Appointments are made upon the recommendation of the Resident Commissioners, subject to the approval of the High Commissioner for Basutoland, the Bechuanaland Protectorate, and Swaziland, and confirmation by the Secretary of State for Dominion Affairs. These appointments are usually filled by the selection of local candidates.

Shanghai Municipal Appointments.—Inquiries regarding appointments under the Shanghai Municipality should be addressed to Messrs. J. Pook and Co., 68, Fenchurch-street, London, E.C. 3.

WOMEN'S MEDICAL SERVICE FOR INDIA

AMONG careers open to medical women abroad the Women's Medical Service for India deserves honourable mention. Admission is made by selection in India and England, preference being given to those with Indian experience. The Service is open to fully qualified medical women of British or Indian nationality, and with the present amount of Government subsidy the number of full medical officers is limited to 44. There are six to ten temporary officers, and in addition there is a training reserve of about fourteen recently qualified women holding degrees in medicine of Indian universities. Medical women proceeding to India to join the Women's Medical Service receive a sufficient sum for a first-class passage to India. On landing they are posted to one of the larger women's hospitals to gain Indian experience and to learn the language. For a further period they are appointed to act temporarily for medical women on furlough. They are then definitely appointed to the charge of hospitals. Private practice is allowed, provided it does not interfere with official duties. The only exception is in administrative or educational posts, when an allowance in lieu of practice is given. The amount obtained from practice varies according to the station, but in most cases it forms a fair addition to the salary, varying from £150 to £1000 a year.

Excellent opportunities for surgery, gynæcology, and midwifery are found in the Women's Medical Service. Opportunities are likely to open in the future in connexion with maternity and child welfare. Doctors in charge of hospitals have ample scope for administration and their duties always include some teaching of Indian nurses and dispensers, as well as training young medical women as house surgeons and physicians. Teaching posts at Medical Colleges and Schools for Women form about one-third of the total sanctioned posts in the Service.

The cost of living in India is much higher than formerly, but it should be possible for a medical woman (with house provided) to meet actual household expenses for about Rs. 350 per mensem, leaving the remainder of her salary for dress and personal expenses. To this must be added the necessary saving to meet additional expense for furlough and leave spent in the hills. Rates of pay are as follows:—

Years of service	Overseas* allowance per mensem	Salary per mensem	English equivalent† per annum
1 to 3	Rs. 100	Rs. 450	£495
4 to 6		Rs. 500	£540
7 to 9	,	Rs. 550	£585
10 to 12	,	Rs. 600	£630
13 to 15	Rs. 150	Rs. 650	£720
16 to 18	,	Rs. 700	£765
19 to 21	,	Rs. 750	£810
22 to 24		Rs. 800	£855
over 24		Rs. 850	£900

* *Given to officers of European domicile.*
† At rupee value 1*s.* 6*d.*

Furnished quarters are provided, representing an additional Rs. 150 per mensem or an allowance is given instead.

Leave on average pay is earned at the rate of 2/11ths of the period spent on duty.

Study-leave is granted to the extent of 12 months in the total service and will not be granted more than twice in the course of an officer's service. During study-leave an officer draws half average pay, with a study allowance at the rate of 12*s.* a day during the course of study. Officers of European domicile are entitled to four free return first-class passages from a port in India to a port outside India in their whole service. The first passage is not granted until after the expiry of four years' approved service, and thereafter passages may be granted at intervals of not less than four years. There is a Provident Fund to which members of the Service contribute 10 per cent. of their pay. The Service contributes another 10 per cent., which accumulates at interest and is repaid on retirement.

Admission to the Service is made by selection in India and England—preference being given to those with Indian experience. Vacancies are few, usually three or four only in each year. Candidates in the United Kingdom should apply to the medical adviser, Countess of Dufferin's Fund, care of the High Commissioner for India, India House, Aldwych, London, W.C. 2. Candidates in India should apply to the Chief Medical Officer, Women's Medical Service, Dufferin Office, Red Cross Building, New Delhi.

PRISON MEDICAL SERVICE

Whole-time appointments.—At the larger prisons the medical-officerships are full time appointments, and at certain establishments deputy medical officers are appointed to assist in the work. Whole-time medical officers are in two classes: medical officers, class II., £525 a year proceeding by annual increments of £25 to £800 a year (the commencing salary for those holding the diploma of psychological medicine being £575 per annum); medical officers, class I., £800 a year proceeding by annual increments of £30 to £1000 a year. Unfurnished quarters are provided or an allowance in lieu is made. The posts are pensionable. The initial appointment is to the class II. grade with prospects of promotion to the higher rank. Of the whole-time Prison Medical Service 16 are class II. and 12 are class I. Promotions from class II. to the rank of medical officer, class I., are made as vacancies occur. Three of the senior medical officers receive an additional allowance of £50 per annum, and at certain prisons, medical officers receive fees for giving evidence in the criminal courts. Candidates must be fully qualified and registered. Preference is given to those who have held house appointments, have had experience in mental diseases and psychological methods, and are between the ages of 25 and 35 years.

Part time appointments.—The medical officerships of the smaller prisons, where the work is insufficient to occupy a man's whole time, are usually filled by local practitioners, who combine the prison work with their own practice. The salary paid for such part-time work varies according to the extent of the duties required. Such appointments may be terminated with notice at any time, and the holders are not entitled to pension.

Further particulars can be obtained from the secretary, Prison Commission, Home Office, London, S.W. 1.

REFRESHER COURSES FOR SCOTTISH INSURANCE PRACTITIONERS.—A scheme of subsidised refresher courses for insurance practitioners in Scotland, corresponding to that planned for England and Wales, is to be inaugurated on Sept. 6th in Edinburgh, where some 30 doctors will assemble for a fortnight's post-graduate study. It is proposed to appoint an advisory committee consisting of representatives of the four Scottish university medical schools, the insurance committees, and the Department of Health for Scotland, to discuss future arrangements, which will include courses in Glasgow, Aberdeen, and Dundee, as well as in Edinburgh.

SPECIAL DIPLOMAS

PUBLIC HEALTH

THE following epitomises the instruction given at various universities and centres of medical education to medical men desiring to obtain diplomas in sanitary science public health hygiene, or State medicine, as the diploma is variously called. Resolutions and rules designed with a view of ensuring the possession of a distinctively high proficiency scientific and practical in all branches of study which concern the public health have been adopted at various times by the General Medical Council, by whom the diploma is registrable and whose rules become binding on the educational bodies concerned.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—The course of study for the Diploma in Public Health will commence on Sept. 28th in the premises in Keppel-street (Gower-street) the gift of the Rockefeller Foundation which has excellent laboratories and research rooms, a fine lecture theatre and classrooms library and museum The course which will extend over a period of nine months of whole-time study is designed in compliance with the requirements of the General Medical Council and will enable students to proceed to the academic Diploma in Public Health of London University The curriculum has been planned on very practical lines, and includes in addition to work with medical officers of health in selected areas, a large number of visits to places of public health interest The course also includes provision for the necessary instruction in infectious disease and hospital management, lectures and demonstrations on physiology applied to hygiene and industry medical industrial psychology, and sanitary engineering A series of lectures by authorities on special subjects is open to members of the medical profession as well as to students of the School. The London County Council the City of London and various other bodies have placed their resources at the disposal of the School for teaching purposes. A course on mental deficiency is provided which members of the public health class may attend The course is designed to enable qualified medical practitioners to secure recognition by the Board of Education as certifying officers, so far as elementary school children are concerned, under the Mental Deficiency Acts

ROYAL INSTITUTE OF PUBLIC HEALTH —Facilities are offered here (23 Queen-square London, W C 1) for students training for the D.P.H There are well equipped laboratories where practical instruction is given in chemistry bacteriology immunology and public health subjects, and analyses are undertaken, both chemical and bacteriological, of milk, water and sewage effluents, providing excellent teaching material

The Course of Study

A diploma of D.P.H. is granted by the Universities of London, Durham Birmingham Wales Aberdeen, Edinburgh, Glasgow St. Andrews, Dublin (Trinity College) and the English Scottish and Irish Conjoint Boards. The course of study is fairly identical in all the centres as would be expected for a registrable title It extends over twelve calendar months or an academic year of full time study covering a period of not less than nine calendar months, subsequent to the attainment of a registrable degree or diploma. At several of the universities it is stated that a certain part of the course must be pursued locally while at others there is a proviso that evidence shall be produced of attendance at courses of institutions approved by the university or licensing body; such particular instruction can be obtained from the centres on application.

At all the centres the course is divided into two Parts and candidates must pass Part I before proceeding to Part II

Part I—The duration of training is about five months, some of the centres stating the period as not less than 280 hours. The usual division of subjects is as follows Candidates will be admissible to examination on producing evidence of having attended during not less than 280 hours at a recognised institution, practical instruction in (*a*) bacteriology and parasitology (including immunology serology and medical entomology) especially in their relation to diseases of man and to those diseases of the lower animals which are transmissible to man; (*b*) chemistry, physics radiology and electrology in relation to public health; (*c*) physiology and biochemistry in their application to nutrition and hygiene; (*d*) meteorology and climatology in relation to public health. The examinations are held at most centres twice a year and the candidates must pass in all the specified subjects at one time

Part II—The duration of training consists of instruction during not less than 120 hours at a recognised institution in the following subjects: (*a*) the principles of public health and sanitation; (*b*) epidemiology and vital statistics (*c*) sanitary law and administration; (*d*) sanitary construction and planning A second part of the examination includes practical examinations in infectious diseases, food inspection and inspection of premises dwelling houses, schools factories workshops, bakeries, dairies and cowsheds

While Part II of the examination entails the acquirement of similar knowledge at all the centres the details of the training differ at certain points—e g where the candidate is using the examination also for obtaining a university degree in public health Intending candidates must, therefore, apply to the selected centre for information.

TROPICAL MEDICINE

Although a qualification in tropical medicine has not been made registrable by statute a diploma is regarded as indispensable for appointments in the Colonial Medical Service and similar positions abroad Systematic instruction for these diplomas is given at the Incorporated Liverpool School of Tropical Medicine (founded in 1898) and at the London School of Hygiene and Tropical Medicine, Keppel-street, Gower street, London, W C; while the University of Edinburgh and the English Conjoint Board grant a diploma.

London School of Hygiene and Tropical Medicine

The course of instruction in tropical medicine and hygiene is divided into two parts: Part I. a three months course in clinical and laboratory instruction, and Part II a two months course in tropical clinical medicine elementary bacteriology and tropical hygiene. The examinations of the Conjoint Board follow closely upon the end of the corresponding course of study The course is recognised by the University of London as a course for associate students The dates of the courses for the session 1937–38 are as follows —

Part I Sept 27th to Dec 17th 1937, Jan 3rd to March 25th 1938 April 4th to June 24th 1938

Part II: Jan 17th to March 18th 1938 April 10th to June 17th, 1938

The course of instruction under Part I includes clinical tropical medicine, applied pathology and medical zoology Part II * comprises instruction in clinical tropical medicine, elementary bacteriology tropical hygiene including in relation to hygiene, anthropology and vital and medical statistics

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* The Andrew Balfour Memorial Fund provides two studentships in the year which carry free tuition in Part II of the Course

Part I is so arranged, in three self contained groups or blocks, as to allow of the admission of a student at the beginning of any block of work, subject to a place in the laboratory being available Accordingly, applications can be received for admission to the classes of protozoology and hæmatology (approximately four weeks), or in helminthology (approximately four weeks), or in entomology (approximately four weeks) The instruction in the Division of Clinical Tropical Medicine is given by the medical staff of the Hospital for Tropical Diseases and by visiting lecturers The resources of the hospitals of the Seamen's Hospital Society at Gordon-street, at the Albert Docks, and elsewhere, are available for the instruction of the students at the School

Liverpool School of Tropical Medicine

The Liverpool University Diploma of Tropical Medicine (D T M) is open only to those who possess a qualification to practise medicine recognised by the university, and who have been through a full course of instruction at this school The subjects of examination are (*a*) Parasitology , (*b*) Entomology , (*c*) Tropical Medicine, including Ætiology, Symptoms, Pathology, Diagnosis, and Treatment of Tropical Diseases The course consists entirely of Practical and Clinical work, given at the Laboratory at the University, and at a recognised hospital in which beds are specially reserved for Tropical Diseases Applications should be made to the Dean of the Medical Faculty, University of Liverpool

The University also grants a Diploma in Tropical Hygiene (D T H) The subjects of examination are (*a*) Tropical Hygiene (including Sanitary Engineering, Vital Statistics and Epidemiology, and Applied Parasitology and Entomology , (*b*) Practical Sanitation , (*c*) Bacteriology , (*d*) Chemistry (including Meteorology and Climatology) Accommodation for research work is to be had at the University Laboratory The Mary Kingsley Medal is awarded by the school for distinguished work in connexion with Tropical Medicine

University of Edinburgh

Candidates for the Diploma in Tropical Medicine and Hygiene must be graduates in medicine and surgery of the University of Edinburgh or hold corresponding registrable degrees or qualifications of some other licensing body, or of other universities or medical schools specially recognised The course of instruction, comprising a primary and a second course, is given during the autumn and spring terms, October to March, and includes Tropical Hygiene, Bacteriology, Entomology and Parasitology, Diseases of Tropical Climates (systematic and clinical), Tuberculosis, and Venereal Diseases Provision is made in the University for instruction in all subjects

The examinations are written, oral, and practical, and are held at the end of the courses Part I in December, and Part II in March Candidates are required on the first occasion of presenting themselves for examination in either part to appear for all the subjects of that part Candidates who fail to pass the entire examination in either part within a period of 12 months after first appearance are required to reappear for all the subjects The University is included in the list of institutions in which courses of instruction in Tropical Medicine may be taken by officers on appointment to the Colonial Medical Services or during study-leave Full particulars can be obtained from the Dean of the Faculty of Medicine

English Conjoint Board

The Board conducts an examination three times a year for the D T M and H granted by the Royal Colleges—namely, in January, April, and July The examination is in two parts which may be taken together or separately, but candidates are not allowed to take Part II until they have passed in Part I

Part I consists of written, oral, and practical examinations in Protozoology, Entomology and *Helminthology in relation to Tropical Diseases*, Principles of Sanitation—water supplies, disposal of waste matters, hygiene of buildings , personal hygiene in the tropics Part II consists of written, oral, and clinical examinations in Tropical Medicine and Surgery, including Clinical Pathology , Tropical Hygiene, including elementary epidemiology and vital statistics, and administrative measures for the prevention and control of disease in the tropics, Bacteriology in relation to Tropical Medicine and Hygiene *The examination is open to candidates* possessing *either* a qualification in medicine, surgery, and midwifery which is registrable in the British Medical Register, *or* the medical and surgical degrees of an Indian, Colonial, or Foreign University recognised by the Examining Board in England Candidates intending to present themselves for either part of the examination, must give notice in writing to the Secretary of the Examining Board not less than 21 days before the date of Part I, *submitting*, at the same time, evidence that they have completed the courses of study required by the regulations The course of study for Part I extends over three months, and the course for Part II, which may be taken concurrently with that for Part I , extends over five months The Committee of Management may modify the conditions of the regulations with regard to admission to the examination in the case of candidates (*a*) who have been engaged in medical work in tropical countries, (*b*) *who produce evidence of having been engaged in* original investigations in tropical medicine or hygiene. No exemption is granted from any subject of the examination Copies of the regulations and further particulars may be obtained, free of charge, from the Secretary, Examination Hall, Queen-square, London, W C 1

PSYCHOLOGICAL MEDICINE

The Universities of London, Durham, Leeds, Manchester, Edinburgh, Dublin (Trinity College), Ireland (National University), and the English Conjoint Board grant diplomas in psychological medicine under conditions that are fairly comparable in the standard of the tests and in the duration of the courses , the details on these points can be obtained from the various examination bodies

University of London

In London, courses of instruction for the Diploma in Psychological Medicine are given annually at the Maudsley Hospital, Denmark Hill, which is a school of the University of London The course consists of two parts, commencing in January, and is adapted also for the diploma of the Conjoint Board A similar course is held at the Bethlem Royal Hospital in association with St Bartholomew's Hospital medical school Comprehensive courses of instruction in the psychoneuroses, child disorders, and delinquency are given at the Tavistock Clinic which is now recognised as a teaching centre for the diploma

University of Durham

The university grants a diploma in psychiatry, and at the Medical School, King's College, Newcastle-upon-Tyne, there is a department of instruction in psychological medicine The candidate must be a registered medical practitioner, and subsequent to qualification have received instruction in anatomy and physiology of the brain and nervous system. The examination is divided into two parts, Part I dealing with anatomy, physiology, pathology, and bacteriology , Part II with psychology and experimental psychology Candidates may present themselves for the whole examination or for either part separately The course of training is very detailed, post-mortem technique being the subject of a series of sessions, the same holding good for psychiatry and experimental psychology

University of Leeds

The university grants a diploma in psychological medicine to graduates in medicine of at least one year's standing who can prove that they have received systematic instruction on the normal and morbid anatomy of the brain and have held an appointment in a mental hospital. The examination is divided into three parts: Part I. deals with general psychology and the structural development and physiology of the nervous system; Part II with the pathology of that system and Part III with clinical psychiatry, the administration of mental hospitals and the medico-legal aspects of insanity Candidates may present themselves for the three parts simultaneously or separately they may submit a thesis or published work which if approved will gain certain exemptions

University of Manchester

The university grants a diploma in psychological medicine to graduates of at least one year's standing The examination is held in two parts Before presenting themselves for Part I. candidates must subsequent to qualification have attended approved courses in the structure of the nervous system and in experimental psychology Before presenting themselves for Part II. they must produce evidence of having gone through an approved course of instruction in the pathology of the nervous system and in clinical neurology and of having attended demonstrations in psychological medicine and received clinical instruction, either as residents or in approved cases, as daily attendants at an approved hospital for mental diseases The course extends over a period of three university terms, two of which must be taken in the university and candidates may present themselves for both parts simultaneously or for each separately

University of Edinburgh

Candidates for the Diploma in Psychiatry must be graduates in medicine and surgery of the University of Edinburgh or hold corresponding registrable degrees or qualifications of some other licensing body or of other universities or medical schools specially recognised The course for the Diploma extends over one term and is given from January to March Candidates are required subsequent to the date of graduation or obtaining a recognised qualification to have held (*a*) a resident appointment for one year in a hospital for mental disorders approved by the Faculty of Medicine or alternatively (*b*) a six months appointment as defined in (*a*) and six months' practical study of nervous diseases in a special or general hospital approved by the Faculty of Medicine. There are two examinations for the Diploma both of which are held in March Part I. comprises: 1 Anatomy of the Nervous System 2 Physiology of the Nervous System; 3 Psychology Part II comprises: 1 Neuropathology 2 Psychiatry and Clinical Psychiatry; 3 Clinical Neurology Candidates who have held an asylum appointment for a period of five years or more may be exempted from the course of study in one or more subjects of the curriculum Full particulars can be obtained from the Dean of the Faculty of Medicine

University of Dublin (Trinity College)

A post-graduate diploma in Psychological Medicine is conferred upon registered medical practitioners who have held a resident medical appointment at a recognised institution for the treatment of Mental Diseases for 12 months, or who have held such an appointment for six months and have attended clinical instruction at an approved institution for six months. Candidates must also attend special courses of instruction and pass a special examination. Details can be obtained from the Registrar of the School of Physic, Trinity College Dublin

National University of Ireland

This University confers a diploma in Psychological Medicine The diploma may be conferred on registered medical practitioners who although they may not have matriculated at the University shall have completed the prescribed course of study A certificate of post-graduate work will be required from the candidates, either in the study of mental disease or as medical assistant in an asylum. Application should be made to the Registrars of the Constituent Colleges, University College Dublin University College, Cork, and University College Galway for all information

OPHTHALMIC MEDICINE

Special diplomas in ophthalmic medicine and surgery are issued by two examining bodies

University of Oxford

The *diploma in ophthalmology* (D O) is granted to registered medical practitioners, and to non registrable graduates of universities approved by the board of the faculty of medicine after they have passed an examination which is held annually in June This examination is open to candidates who have attended a special two months course of instruction at Oxford, and who have in addition done a ten months course of clinical ophthalmology at a recognised hospital Entries for the course should be made through the dean of the medical school Oxford University, from whom any further information may be obtained.

English Conjoint Board

The Conjoint Board grants the D O.M.S after an examination held in two parts twice yearly in February and July Part I comprises anatomy and embryology of the visual apparatus, physiology of vision and elementary optics Part II comprises optical defects, ophthalmic medicine and surgery, and pathology with special reference to ophthalmology The examination in each case is written oral and practical or clinical Candidates may only enter for Part II on completion of a year of special study of ophthalmology after obtaining a recognised qualification.

MEDICAL RADIOLOGY AND ELECTROLOGY

University of Cambridge

Before admission to any course for the Diploma a candidate shall produce evidence that he holds a medical qualification approved by the committee and also satisfy the committee that he has had sufficient post-graduate clinical experience The next course which begins early in October 1936 occupies nine months. The first four months, which can be spent either in Cambridge or in London, are occupied with (*a*) lectures and practical work in Physics in preparation for the examination for Part I in February (*b*) an introductory course of clinical instruction in Radiology and Electrology (*c*) a course of instruction in Pathology in relation to Radiology and Electrology The next three months must be spent in London and are occupied with (*a*) lectures and demonstrations in Radiology and Electrology (including Radium Therapy) organised by the British Institute of Radiology (*b*) clinical instruction in the Radiological Department of a hospital approved by the committee During the final two months of the course a candidate must hold a clinical clerkship or similar appointment in the radiological department of a hospital approved by the committee This part of the course may be done in London, or elsewhere The examination for Part II is held in July and October Further particulars as to courses and examinations may be obtained from the secretary for the diploma, Cavendish Laboratory Cambridge.

University of London

The course for the academic post-graduate diploma in Medical Radiology extends over one academic year and is open to registered medical practitioners and graduates in medicine of this or any other approved University The subjects are: Part I -Physics and Electro-technology Part II, (*a*) Radiology and Radio diagnosis, (*b*) Radiotherapy The examination is held in March and June (Part I), and in July and December (Part II) Particulars may be obtained from the Academic Registrar

University of Liverpool

Candidates before admission to the examination for the D M R E must possess a registrable qualification approved by the University in medicine and surgery, and must have attended courses of instruction in (*a*) *physics (two terms)*, (*b*) (*i*) *radiology, and* (*ii*) electrology during nine months in the X ray and electrotherapeutic department of a hospital or hospitals An examination is held in March and June (Physics) and in June (Radiology and Electrology) Examination in either part may be taken separately A registration deposit fee of £5 5*s* is charged on application and credited to the fees, but is not returnable in the event of the candidate failing to register These courses commence during the first week in October Application should be made to the Dean, Faculty of Medicine, the University of Liverpool

University of Edinburgh

Candidates for the Diploma in Medical Radiology must be graduates in medicine and surgery of the University of Edinburgh or hold corresponding registrable degrees or qualifications from some other licensing body, or of other universities or medical schools specially recognised The course of study for the diploma covers an academic year (9 months) and commences in October The number of candidates to be admitted to the course is limited, and early application for admission is essential. Candidates are not admitted to the examination for the diploma until after the lapse of not less than one year from obtaining a recognised qualification The examination, which is written, oral, and practical, is in two parts (*a*) Physics, and (*b*) Radiology Full particulars may be obtained from the Dean of the Faculty of Medicine

English Conjoint Board

The examination for the D M R, R C P and S comprises Part I Physics, as applied to Radiology, and Part II Medical Radiology, with special reference to its clinical application, including Radio diagnosis, X Ray Therapy, and Radium Therapy Both examinations, which are written, oral, and practical, are held during January and July The course of study extends over one academic year of full-time study, subsequent to the attainment of a recognised qualification Before admission to the examination the following certificates must be produced For admission to Part I evidence of having attended a course of instruction in physics as applied to radiology at a recognised medical school or institution for not less than three months For admission to Part II evidence of having attended at a recognised hospital courses of instruction, theoretical and practical, in medical radiology, including radio-diagnosis, X ray therapy, and radium therapy, with clinical experience for three terms

Candidates may enter for Parts I and II either together or separately, subject to the production of the required certificates, but no candidate is permitted to proceed to Part II of the examination until he has passed in Part I Candidates must give 21 days' notice, in writing, of their intention to present themselves for examination, to the Secretary at the Examination Hall, 8–11, Queen-square, London, W C 1, forwarding at the same time the necessary certificates of study The conditions regarding admission to examination may be modified at the discretion of the Committee of Management in the case of a candidate (*a*) who has carried out original investigations in any subject of the examination, or (*b*) whose studies have extended over a prolonged period of time without fulfilling the exact conditions Exemption will not be granted from any part of the examination

LARYNGOLOGY AND OTOLOGY

English Conjoint Board

The Board grants the D L O after an examination held in two parts, in June and December Part I comprises anatomy, embryology, and physiology of the ear, nose, pharynx, larynx, trachea and bronchi, and œsophagus Part II comprises the medicine, surgery, and pathology of the ear nose pharynx, larynx, trachea and bronchi, and œsophagus, and the recognition and use of special instruments and appliances The examination in each case is written, oral, and practical or clinical Candidates may only enter for Part II on completion of one year of special study of the diseases of the ear, nose, pharynx, and larynx, after obtaining a registrable qualification, or a degree in medicine and surgery of a University recognised by the Board

TUBERCULOUS DISEASES

University of Wales

Candidates may be admitted to examination for the Tuberculosis Diseases Diploma after the lapse of not less than two years, from the date of obtaining a qualification in Medicine, Surgery, and Midwifery, registrable in Great Britain, or in the Dominions, Colonies, and Dependencies of the British Empire Every candidate must have held a resident post in a Tuberculosis Hospital, or at an Orthopædic Institution providing not less than one hundred tuberculosis beds, or shall satisfy the Faculty of Medicine that he has pursued a special study of tuberculosis equivalent to the above for a period of not less than twelve months

The examination is in two parts Part I (*a*) written and (*b*) oral and practical, including the examination of patients, and the recognition of specimens, Part II is a written and practical examination on the epidemiology, pathology, and bacteriology of tuberculosis. Every candidate will be required to satisfy the examiners in both parts in the same examination. The Course of Instruction commences in January and continues until May each year, when the examinations are held Further particulars may be obtained from the Secretary, The Welsh National School of Medicine, The Parade, Cardiff

A limited number of appointments for part-time Assistant Tuberculosis Physicians are advertised annually in September by the Welsh National Memorial Association, enabling suitably qualified and selected candidates to study for the Diploma Particulars on application to the Secretary, Welsh National Memorial Association, Memorial Offices, Westgate-street, Cardiff

BACTERIOLOGY

University of London

The course of study for the Academic Post-graduate Diploma in Bacteriology extends over one academic year and is open to (*a*) Graduates in Medicine, Science, and Pharmacy of this or another approved University, whose previous training has, in the opinion of the University, fitted them to profit by the Course, and (*b*) registered medical practitioners and other students who, though not graduates, have obtained a qualification and undergone a previous training which, in the opinion of the University, has fitted them to profit by the Course

A Course necessary to fulfil the regulations of this Diploma has been planned by the London School of Hygiene and Tropical Medicine, Keppel street, London, W C, and full particulars with regard to the Diploma may be obtained from the Academic Registrar, University of London, Bloomsbury, W C 1

CLINICAL PATHOLOGY

University of London

The course of study for the Academic Post-graduate Diploma in Clinical Pathology extends over one calendar year, and is open to graduates in Medicine and to registered medical practitioners. The subjects are (1) Morbid Anatomy and Histology; (2) Bacteriology and Serology; (3) Biochemistry The examination is held in December Particulars may be obtained from the Academic Registrar, University of London, Bloomsbury, W C 1 Particulars of the External Diploma in Clinical Pathology may be obtained from the External Registrar at the same address

ANÆSTHETICS

English Conjoint Board

Examinations for the new diploma of D.A will take place twice yearly in May and November Tests will be written and oral Subjects include history, theory, and practice of anæsthetics; pharmacology and elementary chemistry of anæsthetic drugs; pre- and post-operative conditions relevant to anæsthesia A candidate must either have held a resident appointment in a recognised general hospital for twelve months, of which six shall have been as resident anæsthetist and six as house physician or house surgeon in the general wards; or he must have administered anæsthetics in a recognised general hospital on not less than one thousand occasions, at least one-half of which shall have been for major surgical procedures. These conditions may be modified for candidates who have carried out original investigations in the science or practice of anæsthetics or whose studies have extended over a long period without fulfilling the exact conditions. During the next three years the diploma may be granted to anæsthetists of not less than ten years standing attached to a teaching hospital.

CHILD HEALTH

English Conjoint Board

Examinations for the diploma of D C H will be held in March and October The examination (written, oral and clinical) will comprise the following subjects, special emphasis being laid on their preventive aspects (*a*) anatomy, physiology, and pathology of childhood (*b*) development of the child, physical and mental including speech, with their disorders physical education in childhood (*c*) hygiene and dietetics of infancy and childhood, (*d*) affections of the new born (*e*) disease in infancy and childhood medical and surgical; (*f*) therapeutics of infancy and childhood including remedial treatment physical and mental (*g*) legislation and public administration in regard to the care of children, including the methods of infant welfare centres and of the school medical service The candidate must have been in a recognised children's hospital or department as resident medical officer for six months or as clinical assistant for a year, though these conditions may be modified in the case of candidates who have carried out original research or whose studies and practice have extended over a long period Forms of application to be obtained from the secretary Examination Hall 8 Queen-square London W C 1 must be returned at least 21 days before the examination

DENTAL SURGERY

TEACHING INSTITUTIONS IN DENTISTRY

REGISTRATION on the Medical Register entitles a practitioner to practise dentistry although he cannot register as such without degree or licence in dentistry but few dental appointments at general or special hospitals or dispensaries are available save to those with a special diploma and, until registered on the Dentists Register no dental work under the Additional Benefit Scheme of the National Health Insurance Act can be undertaken.

The examining bodies in dentistry which grant degrees and diplomas in the subject are as follows Royal College of Surgeons of England Royal College of Surgeons, Edinburgh Royal Faculty of Physicians and Surgeons of Glasgow Royal College of Surgeons in Ireland, and the following universities: Birmingham, Bristol, Durham, Leeds, Liverpool, London, Manchester Sheffield St. Andrews Dublin (Trinity College), Queen's University of Belfast, and the National University of Ireland The student should apply to the secretaries of the various Conjoint Boards or to the deans of the medical faculties or medical schools for a syllabus.

A graduate in dental surgery (M.D.S or B D.S) of a recognised university in the United Kingdom shall in future be admitted direct to the second and final examinations of the Royal College of Surgeons of England

TEACHING INSTITUTIONS IN LONDON

Royal Dental Hospital

The Royal Dental Hospital of London School of Dental Surgery Leicester-square, is a school of the University of London The school provides the special dental education required by the University of London for the B D.S Degree and the Royal College of Surgeons for the Licence in Dental Surgery The general part of the curriculum may be taken at any general hospital The hospital is open from 9 A.M. to 6 P.M. there being one honorary staff for the morning and another for the afternoon of each day Pupils are received for the training in dental mechanics recognised by the curriculum. The instructor at the commencement of each session gives a course of lectures on Operative Dental Surgery The two senior house surgeoncies and the six house surgeoncies are held for four months each and are open to all qualified students The lecturers in addition to their lectures, give special demonstrations on the Microscopy of Dental Anatomy and Dental Surgery The lecturer on Dental Mechanics also gives practical demonstrations in the laboratory Four entrance scholarships of £50 per annum for two years subjects chemistry physics biology and general knowledge four scholarships of £25 per annum for two years subjects dental prosthetics and dental anatomy

University College Hospital Dental School

This Hospital and School, situated at the corner of Great Portland and Devonshire-streets W has recently been thoroughly reorganised and is now fully equipped with all the most modern appliances. Students are entered as students of University College Hospital, and, as such attend the classes of Anatomy and Physiology in University College which is a few minutes walk from the Dental Department in Great Portland-street, hitherto known as the *National Dental Hospital*—the first Dental School to admit Women Students. Practical courses to comply with the R C.S curriculum are held. Clinical Lectures and Demonstrations are given, and each student on entering passes through a preliminary course under a demonstrator

Guy's Hospital Dental School

The work of the Dental Department begins daily at 9 A.M. both in the anæsthetic rooms and in the conservation room There is ample accommodation for extractions, both with general and local anæsthetics, together with waiting and recovery rooms. Patients are admitted between 8 45 and 9.30 A.M. and are seen by the dental surgeon for the day the staff demonstrators, the dental house surgeons, and the dressers The Conservation Room is open from 9 A.M. till 5 P.M., and is under the charge of the Director of the department of Conservative Dental Surgery, aided by the assistant to the Director. It affords accommodation for about 100 dental chairs, with the necessary equipment of the most modern type for the use of the Dressers, who, under the supervision of the Staff, perform the various operations of Dental Surgery. There is a separate department for denture patients under the charge of the Director of the Dental Prosthetics Laboratory affording accommodation for 15 chairs, and also a special department for children with accommodation for 20 chairs. The Members of the staff attend every morning and afternoon to give demonstrations and otherwise assist students in their work in the Conservation Room and Prosthetics Laboratory. The Probationers' Laboratory is supervised by the Director of the Conservation Room together with his Assistant, and instruction is given in operative dentistry on a "mannikin" to students during their first three months of clinical study by the Staff Demonstrators. Students in Dental Prosthetics are occupied with this subject for two years, during which time a graded, systematic, and full course of instruction is given under the supervision of the Director of the Prosthetics Laboratory, assisted by four demonstrators, a house surgeon, and skilled mechanics.

Dental students have the opportunity of attending at this hospital the whole course of instruction required by the examining board for the B.D.S. Lond. or L.D.S. Eng.—viz., the complete course in dental prosthetics, the special lectures and practice of the Dental Department, and the general lectures and practice of the Medical School. Students who enter for a medical as well as a dental course are allowed to pursue their study of Dentistry during any period of their medical course most convenient to themselves.

Twenty-one house surgeons, 20 assistant house surgeons, and 4 student demonstrators of Dental Histology are appointed annually. The following appointments are held by students: Full surgeon's dresser, assistant surgeon's dresser, dresser in the children's department, casualty dresser, dresser to the director of the conservation room, probationary dresser, clerk to the anæsthetist and dresser in the general anæsthetic and local anæsthetic rooms. Two Entrance Scholarships are awarded annually in April as follows: (1) A War Memorial Scholarship in Arts of the value of £40 per annum for four years, open to students under 19 years of age. Candidates are required to take English and any two of the following subjects: French, German, Latin, Greek, and Mathematics. (2) A Science Scholarship of the value of £40 per annum for four years, open to students under 20 years of age. Candidates are required to take two of the following subjects: Chemistry, Physics, and Biology.

King's College Hospital Dental School

The Dental School is part of the Medical School of King's College Hospital, and was opened in November, 1923. The Dental Out-patient Department of the Hospital is used for the performance of dental extractions. A large Conservation Room with provision for 40 dental chairs has been equipped. Smaller rooms are used for clinical teaching and administrative requirements, and a specially equipped laboratory for training in dental mechanics. An X ray apparatus has been installed for use in dental skiagraphy. The Dental museum contains a large number of specimens illustrating oral, buccal, dental, and other diseases. The library, lecture theatre, lecture rooms, common rooms, and the refectory are all available for the use of students. Courses of study, including practical work, are provided for the degree of Bachelor of Dental Surgery of the University of London, and for the Diploma in Dental Surgery of the Royal College of Surgeons of England. Special arrangements can be made for those students who wish to take a medical degree or qualification in addition to a degree or diploma in Dental Surgery.

The following salaried appointments are open to qualified members of the School: Registrar, Resident House Surgeon, Non-Resident House Surgeons, and Tutors in Dental Mechanics, Operative Dental Surgery, and Dental Materia Medica.

London Hospital Dental School

This school is a part of the London Hospital and Medical College. The school provides a complete curriculum in all subjects for the B.D.S. Degree and for the L.D.S. Diploma, and is admirably adapted for the purpose of teaching. It possesses, in addition to the Theatres, Laboratories, and Museums in the College, a special Museum of Dental Anatomy and Surgery, Operative Dentistry, Prosthetic and Extraction Rooms, an X Ray Room, and Laboratories for Practical Metallurgy and Prosthesis. A systematic course of instruction is arranged for pupils. The Laboratory contains every modern apparatus, and is in charge of a skilled curator and his assistants. Entrance Scholarship: Francis Farmer Entrance Scholarship in Science, value £25, no age limit. Subjects: Biology, Chemistry, and Physics. Prizes: The Harold Fink Prize in Operative Dental Surgery, value £8 8s., the "London" Prize in Dental Prosthesis, value £6 6s. Prizes are also offered for competition at the end of each of the courses of lectures in the curriculum. Connected with the Medical College and Dental School are a Library, Athenæum Clubs Union Dining Hall with moderate tariff, and an Athletic Ground. A new Residential Hostel has been opened, and provides accommodation for upwards of 50 students.

TEACHING INSTITUTIONS OUTSIDE LONDON

Birmingham Dental Hospital

The Dental Hospital in Great Charles street has accommodation for 100 students. The equipment is in accordance with the most modern requirements for the efficient teaching and practice of Dental Surgery, including Radiology and a department for Practical Pathology and Bacteriology. The hospital, both internally and externally, has been renovated and several departments have been reconstructed. The operations performed annually average 70,000, including gold and other fillings, crowns, bridges, porcelain inlays, jacket crowns, and injections for block and infiltration anæsthesia. The orthodontic department is one of the foremost in the country. The prosthetic and mechanical department is large and well lighted and two highly skilled instructors are always present, while two honorary officers give daily demonstrations.

Leeds University School of Dentistry

The School of Dentistry is adequately equipped to provide for the complete training of the dental student. It forms a part of the Leeds School of Medicine whilst the instruction in clinical and mechanical dentistry is carried out in the Dental Hospital. The School is now in occupation of a spacious new building especially designed to the requirements of modern dental teaching. The School is also the dental department of the General Infirmary, and its close association with the work of that institution ensures an adequate supply of clinical material, and enables a fuller insight into the position dental surgery holds in relation to general medicine and surgery, especially with regard to the major diseases and injuries of the head and neck. The courses of study are mainly designed to meet the requirements of the B.Ch.D. and L.D.S. Leeds, but every opportunity is afforded to students preparing for the degrees or diplomas of other licensing bodies. Full time teachers give the instruction in clinical dental surgery, prosthetic dentistry, and mechanics, which is carried out under the supervision and direction of the Professor of Clinical Dental Surgery and members of the Honorary Staff. Special facilities are provided for instruction in Orthodontia, Radiography, Local and General Anæsthetics and Bacteriology. Prizes are offered for competition to students in their respective years of study Post-graduate clinical courses are arranged in collaboration with the Dental Board of the United Kingdom, and facilities exist to meet the requirements of dental surgeons desirous of obtaining special post-graduate instruction.

University of Liverpool School of Dental Surgery

Students taking out courses in dental surgery in the University of Liverpool should take the dental degree (B.D.S) or licence (L.D.S) of this university for which the courses of study are specially designed but complete arrangements are also made for students desirous of preparing for the examinations of other licensing bodies Courses of instruction for the whole of the dental curriculum are provided in connexion with the faculty of medicine of the university Students of dentistry take some subjects in the medical curriculum in the same classes as students of medicine and all the necessary classes in the special subjects of their own curriculum are provided in the university and at the dental hospital The dental school is a modern building and comprises an extensive dental laboratory dental mechanics demonstration room operative demonstration theatre phantom demonstration room, dental pathological and research laboratory ceramic department and the offices of the director of dental education. The dental hospital, situated in Pembroke-place, adjoins the dental school the university and Royal Infirmary The ground floor contains a large waiting hall examination room extraction and anæsthetic rooms (with special waiting and recovery rooms for each) staff room and a special room for nurses. The first floor contains a large lecture hall library museum, and prosthetic department with special laboratories The third floor contains orthodontic, oral surgery and photographic departments The whole of the top floor is devoted to conservation work it is lighted entirely from the north, and contains 50 pump operating chairs, brackets, and electric light Provision is also made for the use of electric motors

University of Manchester School of Dental Surgery

Courses of study are provided to meet the requirements for the B.D.S Degree and the L.D.S Diploma of the University of Manchester, and for the L.D.S Diploma of the Royal College of Surgeons of England. At the Dental Hospital instruction is given in practical Dental Mechanics Operative Dentistry, Diagnosis and Extraction, Orthodontics, Dental Prosthetics Anæsthetics, and Radiography by specially appointed Clinical Teachers All the courses of instruction are open to women students

Newcastle upon Tyne Dental Hospital and Sutherland Dental School

These institutions constitute the dental department and are a component part of the medical school King's College Newcastle-upon-Tyne in the University of Durham The Dental Hospital and School, erected within the grounds of the Royal Victoria Infirmary were opened in 1932 and are equipped with the most modern apparatus and an up-to-date dental museum It is possible to undertake here the whole of the dental curriculum—i.e systematic lectures dental and general hospital practice together with the mechanical pupilage Recently a dental research scholarship fund of £5000 has been made available for research in dental science, in addition to which there are various prizes open for competition amongst the students in their respective years The Dental Board of the United Kingdom recognises the school for the purpose of granting its bursaries to students who are able to comply with the conditions laid down by the board The composition fees payable by dental students are £90 for all systematic lectures and laboratory work at the school for the B.D.S (or £85 for the L.D.S) £50 for dental hospital practice for B.D.S (or £40 for L.D.S) £10 10s for general hospital practice and £80 for pupilage in dental mechanics Students proceeding to the L.D.S are required to conform to the preliminary requirements of the General Medical Council for the registration of dental students but students for the B.D.S must satisfy the matriculation requirements in the same manner as medical students in the faculty of medicine of the university

Sheffield University School of Dental Surgery

The school consists of a department of dental mechanics within the university Western Bank, and departments of the faculty of medicine in which teaching of the preliminary medical subjects of biology anatomy, and physiology is carried out the clinical dental department is housed in the out-patients block of the Sheffield Royal Hospital The department of metallurgy is one of the foremost in the country and a special course is arranged for dental students Courses are primarily designed to meet the requirements for the Sheffield University degrees and diploma but every opportunity is given to students reading for the degrees and diplomas of other licensing bodies. All courses are open to men and women alike

The department of dental mechanics has been re-equipped and extended and the teaching reorganised under the supervision of a full time instructor and his assistant.

Despite the fact that the number of entries to this school has almost doubled in the last few years it still ranks as one of the smaller schools and is therefore able to offer greater facilities for individual tuition and students are afforded the opportunity of familiarising themselves in the use of modern equipment and materials.

Clinical teaching is carried out under the supervision and direction of the professor of dental surgery and members of the honorary staff who attend the department daily The close association and coöperation between this department and the medical surgical and special departments of the Royal Hospital is of extreme value in fostering the correct relationship between the dental surgeon and his medical colleague All branches of clinical dental surgery are included in the curriculum including special instruction in radiology local anæsthesia, general and prolonged anæsthesias, orthodontia porcelain work and oral surgery while special courses for dental students are held in the subjects of medicine surgery pathology and bacteriology, with specially arranged out-patient attendance and intensive practical courses

Hostel accommodation is available for men and women students, and a new Students Union has been completed during the past year

SCOTTISH TEACHING INSTITUTIONS

Edinburgh Dental Hospital and School

The Edinburgh Dental Hospital and School at 30 31 and 32 Chambers-street offers special advantages to dental students The General Courses required for the Dental Diploma may be taken in the Medical School of the Royal Colleges of Physicians and Surgeons or in the University schools The general hospital attendance and clinical instruction are taken at the Royal Infirmary The University Medical Schools, and Royal Infirmary are within three minutes walk of the Dental Hospital. The special courses are taken in the hospital The Dental Hospital practice extending over two years, affords a student ample opportunity for a full acquaintance with every branch of dentistry The hospital admits a limited number of indentured pupils They receive their instruction in Mechanical Dentistry concurrently with the general and special courses. A premium of 90 guineas is payable with each such pupil The practice and lectures of the hospital are recognised by and qualify for all the Licensing Boards. Those students who desire to take a Medical and Surgical Diploma in addition to the L.D.S have in this school admirable facilities for so doing The triple qualification of the Royal College of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow is recommended The combined courses (medical and dental) which are concurrently, may be completed in a minimum time of five and a half years The Higher Dental Diploma (H D D) of the Royal College of Surgeons affords an opportunity of obtaining a higher qualification subsequent to registration

Glasgow Dental Hospital and School

This hospital is located at 211, Renfrew-street, Glasgow The school is open to Men and Women Students and Lectures are given on Dental Surgery, Operative Dental Surgery, Orthodontia, Dental Anatomy, and Physiology, Dental Histology, Dental Mechanics, Crown and Bridge Work, Dental Metallurgy, Dental Bacteriology, Radiology, Anæsthetics, and Dental Materia Medica Lectures on general subjects required for Dentistry may be taken at the University or at one of the extramural schools where special provision is made for Dental Students The new Dental Hospital is now open and is equipped with all the modern methods for teaching students The Muirhead scholarship of £150 for one year enables a woman graduate to study for the higher dental diploma (H D D Glasg), and the Muirhead bursary of £60 per annum for four years enables a woman student to obtain the L D S of the Royal Faculty of Physicians and Surgeons, Glasgow A Dall research scholarship is open to men and women

Glasgow Royal Infirmary

Dental Department The following course in the curriculum can be taken at St Mungo's College Anatomy, six months , Practical Anatomy, nine months , Physiology, six months , Chemistry six months , Practical Chemistry, three months , Surgery, six months , Medicine six months Materia Medica, three months Clinical Medicine (three months) and Clinical Surgery (six months) are taken at the Royal Infirmary

IRISH TEACHING INSTITUTION

Dental Hospital of Ireland

All Dental Students who have passed their Second Dental Examination in the Royal College of Surgeons in Ireland (or an equivalent examination or examinations) are admissible to the Clinical Instruction of the Hospital In addition to Clinical Instruction and Special Demonstrations, courses of lectures are given at the hospital on Dental Surgery and Pathology, Mechanical Dentistry, the Administration of Anæsthetics, Orthodontia, Dental Anatomy, and Dental Materia Medica, and instruction in Anæsthetics The course in practical Dental Mechanics can be taken in the Hospital Laboratory Post-graduate courses are given in Orthodontics

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OBITUARY

NORMAN MACLAREN, M B Camb , F R C S Eng

WITH the death of Mr Norman Maclaren at the age of 61, the medical profession in Carlisle loses a popular practitioner-surgeon, and the city a great public servant Norman was the eldest son of Dr Roderick Maclaren, and was educated at the Carlisle Grammar School, going on to Rugby and Trinity College, Cambridge After taking a first in the natural sciences tripos he entered St Bartholomew's Hospital, from which he qualified in 1901 and then held a house surgeoncy at the Metropolitan Hospital while reading for his fellowship Returning to Carlisle, he joined his father in practice, and in 1904 was appointed assistant surgeon to the Cumberland Infirmary, where his father was then senior on the surgical side For long Mr Maclaren was himself not only surgeon but also treasurer, and in this dual capacity he designed the extension of the infirmary and its operating capacity, and found the means for carrying them out He held other surgical appointments—e g , at the Border Counties home for incurables, and the convalescent home at Silloth Nothing connected with medical endeavour lay outside his sphere , he was closely connected with the county nursing and V A.D services and with the St John ambulance brigade Holding, as he did, a commission in a volunteer battalion of the Border Regiment he was sent to Burma on the outbreak of war in 1914, and transferred two years later to Bombay, where he was in charge of the Colaba Hospital, with the rank of major R A M C He retired as lieutenant colonel, and received the territorial decoration Always something of an athlete, he remained a keen mountain climber, and kept himself physically fit for his many-sided life In 1905 he married Elizabeth Stead Davidson of Carlisle, who survives him with two sons, one of whom is a master at Clifton College and the other a house surgeon at St Bart 's

ADOLPHE ZÜND-BURGUET

THE otological world has suffered loss in the death of M Adolphe Zünd Burguet, well known as the inventor of the Electrophonoïde apparatus for the re education of hearing He was 67 years of age, and had been in poor health with gastric symptoms, for which he underwent a *gastrectomy* in 1929 The immediate cause of death was pernicious anæmia Zünd-Burguet was a graduate of Paris University and a man of high scientific attainments Born in Switzerland, of French nationality, he studied at the École des Hautes Études and was later attached to the laboratory of experimental phonetics in the Collège de France The training he thus received made him a master in the twin sciences of phonetics and music, and he was also expert in mechanics and electricity This, coupled with the ability to think clearly and reason accurately from known facts, is shown in his "Principes d'Anacousie" (1912), with a preface by Prof Gariel, and "Conduction Sonore et Audition" (1913), which has been translated into English The second book examines the theories of hearing from Pythagoras and Hippocrates to the present day, and refutes Helmholtz's doctrine of the ear as an exceptional organ and a biological paradox The electrophonoïde was based upon a similar logical application of scientific facts , a member of the Société Française d'Otologie remarked of the method in 1910 that those who understood it were for it, while those who knew nothing about it were against it

Zünd Burguet was made a chevalier of the Legion of Honour in 1920 He was also an officer of the Instruction Publique and Mérite Agricole, while his war services gained him the croix de guerre

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MR G L HAWKER, vice-chairman of King's College Hospital, died suddenly last week He had served on the committee of management since 1904 and was its senior member, having been associated with five chairmen , and his knowledge of affairs was a factor in the smooth removal of the hospital from Lincoln's Inn to South London He was a sympathetic figure also in the medical school and at the Schiff Home of Recovery, where his weekly visit will be much missed

MEDICAL NEWS

Cholera in Hong Kong

The incidence of cholera has been high in certain districts in India, Burma and Siam for some months past Towards the end of June the disease began to decline in these areas and one of the ports Bangkok (Siam) was free from cholera for the first time since December 1936 In July an increase was observed and the disease spread to new areas. The appearance of cholera was notified from Hoihow (Hainan Island Gulf of Tonking) where 100 cases occurred in the first fortnight of July and from Canton where 22 cases occurred in the third week of July On July 26th a case of cholera was notified from Hong Kong where the disease had not been observed since 1932 In the week ending July 31st 11 cases were reported and in the two following weeks 20 and 141 The arrival of cholera infected ships at the ports of Hong Kong and Singapore has also been reported The transfer of Europeans from Shanghai to Hong Kong has complicated the situation to some extent but the situation is not officially regarded as alarming Supplementary supplies of cholera vaccine have been obtained from neighbouring countries and an experienced medical establishment is available at Hong Kong to deal with the emergency

Sterilisation of Catgut

The Ministry of Health has issued new regulations designed to reduce the risk of tetanus infection from soluble ligatures used in surgical operations The regulations require all surgical ligatures and sutures (including catgut) which are not sold under the special licensing arrangements of the Therapeutic Substances Act to bear a label stating in prescribed terms that efficient sterilisation is necessary before use Catgut which is sold under the Minister s licence under this Act is regarded as free from any possible risk of infection, as its manufacture is strictly controlled and it is properly sterilised before being put on sale The Ministry drew special attention in a memorandum issued a year ago to the grave risks of using ligatures (including catgut not sold under licence) which have not been properly sterilised The new regulations introduce a fresh safeguard by making it easy to distinguish between material which has or has not been properly sterilised.

International Meeting of Medical Students

The fourth international conference of medical students took place in Paris from August 6th to 10th as part of the annual congress of the International Confederation of Students. Representatives of sixteen nations attended the business meetings and spent a day visiting the new Beaujon Hospital at Clichy and the Jeulief Cancer Hospital and research laboratories Mr H Keith Lucas, director of the medical office of the confederation (in London) reported on its work during the last three years in collecting information about medical schools of affiliated countries The provisions made for student health services have been investigated and the (English) National Union of Students is about to produce a report on the subject France Poland and Switzerland reported on precautions taken to safeguard medical and other students from tuberculosis England and Scotland it seemed had no comparable services to offer Dr Louis Vauthier founder and head of the Swiss University Sanatorium spoke of the plans to extend the present scheme into an International University Sanatorium The Swiss Government had given half a million (Swiss) francs the township of Leysin had offered a site and plans had been prepared by the International Labour Office at Geneva The London office said Mr Lucas had been trying to extend medical student exchanges but they were increasingly difficult to arrange owing to the growth of nationalist spirit The Central European States, Sweden and Denmark were however keen to extend facilities Medical faculty tours were being planned on a considerable scale for next year Mr Lucas said it had been possible to set up in England a medical students committee representing a large proportion of the medical schools of England Scotland Wales and Ireland The National Union of Students had put at their disposal the services of its own permanent office organisation at 3 Endsleigh street, London, W C 1

Westminster Hospital Medical School

The annual dinner of old students will be held at the Park Lane Hotel W.1 on Saturday Oct 2nd with Mr A F MacCallan in the chair The inaugural address will be given at the Caxton Hall London S W 1 on Oct 4th at 3 P.M. by Sir Seymour Hicks.

St Mary s Hospital Medical School

The annual dinner will be held at Claridge s on Saturday Oct 2nd at 7 30 P M Mr V Zachary Cope will be in the chair

The special post-graduate course open to all medical practitioners without fee will take place on Thursday to Sunday Sept 30th to Oct 3rd inclusive

Chislehurst Orpington and Cray Valley Hospital

For the first time since 1929 this hospital has balanced its budget and the institution is being well supported by the residents in the neighbourhood The hospital has 29 beds and the average number of patients resident is 23 08

Three Counties Hospital, Arlesey

The first part of an improvement scheme has been completed in a new home for nurses recently opened by Mrs Charles Farr The building has cost over £27 000 and the furniture over £4000 The home will accommodate 97 people

Devonshire Royal Hospital Buxton

This institution has embarked upon extensions the cost of which will amount to £30 000

Walsall Hospital

It has been decided to purchase Dundrennen House for conversion into a nurses' home for this hospital

New Nurses Home at Westminster Hospital

Queen Mary has promised to open this home on a date to be fixed in February of next year The cost of the home has been met out of funds already raised a sum of £150 000 is still needed to complete the fund for removing and rebuilding the main hospital

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CORRIGENDUM.—In the report of the section of surgery of the British Medical Association in our last issue, p 446 the reference in line 10 should be to the use of Cyclopropane.

Appointments

FIDDIAN DOREEN P M.R.C.P Lond Third Assistant Medical Officer Wadsley Mental Hospital.

WOLFE, H R. I., F.R.C.S. Eng Junior Assistant in the Surgical Unit Welsh National School of Medicine.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday and cannot appear if it reaches us later than the first post on Wednesday morning

LECTURES ADDRESSES DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL Ducane-road, W

WEDNESDAY Sept 1st.—3 P.M. clinical and pathological conference (surgical)

THURSDAY —3 P.M. operative obstetrics

Daily 10 A.M to 4 P.M. medical clinics, surgical clinics or operations obstetrical and gynæcological clinics or operations autonomic nerves and by the peripheral nerves This anatomical difference coincides with the clinical variations in the type of pain, and materially affects the methods of therapy

The *autonomic nerves* in the pelvis are derived from connector cells in the 1st and 2nd lumbar segments (sympathetic) and in the 2nd and 3rd sacral segments (parasympathetic) The sympathetic connector fibres form the presacral nerve which passes to the inferior hypogastric ganglia on the lateral walls of the rectum The parasympathetic connector fibres form a single nerve on each side, the nervus erigens, which proceeds also to the inferior hypogastric ganglion That afferent fibres are present in the presacral nerve is beyond dispute, Davis (1933) estimates that the proportion is approximately a third Their presence in the nervi erigentes is still disputed From the point of view of the surgeon this is fortunate, since section of the afferent sympathetic path is simple whereas the parasympathetic path is relatively inaccessible in the living

The *peripheral nerves* traversing the pelvis are also limited in number in the false pelvis there are the femoral, genito femoral, and lateral cutaneous nerves, and in the true pelvis there are the obturator, the fifth lumbar nerve, all the sacral nerves, the pudic nerve, and the coccygeal nerve The only nerve derived from the upper lumbar roots to traverse the true pelvis is the obturator, which runs along the inferior border of the psoas just antero superior to the 5th lumbar nerve All these nerves contain afferent fibres The nerve-roots that may be involved extend from the 1st lumbar to the coccygeal

ÆTIOLOGY

Careful clinical examination and investigation will differentiate pelvic visceral pain from somatic limb pain In the cases of visceral pain the ætiology is bound up with a recognisable lesion in a viscus, such as malignant or radio necrotic ulceration, or the retention of blood or pus under pressure There is some dispute as to the exact cause of the pain—e g, whether it is due to surface irritation of nerve endings exposed in the ulcer, to the degree of tension in the viscus, or to the accompanying ischæmia present in every case The theoretical problems concerned are adequately discussed by Morley (1931) and Ryle (1936) and I do not propose to discuss them further now

The ætiology of the somatic type of pain is quite uncertain in these cases but this does not prevent an erroneous conception being transmitted from one text book or authority to another Lavedan (1935), Greenhill and Schmitz (1935), and Balme (1936), among many others, state that the limb pain associated with advanced pelvic malignancy is due to the invasion of the nerve trunks by tumour cells, or their compression by neoplastic masses Greenhill and Schmitz go so far as to say the pain is due to the "fact" that the sensory nerves become involved in the malignant growth—the strange exemption of the motor nerves from this process escapes comment! In actual practice, in my experience, it is the exception rather than the rule for the lumbosacral nerves to be concerned in the pain distribution, the upper lumbar roots are far more commonly involved, and the only nerve having origin from these roots and traversing the pelvis is the obturator, and pain in the obturator nerve distribution is very unusual. I have not yet seen macroscopic evidence of compression of nerves by growth at autopsy, and in three cases where I have examined the lumbosacral nerves microscopically, evidence of pressure or invasion was equally lacking

There are several other quite convincing arguments against the assumption of pressure as the chief cause the rarity of any recognisable neurological signs is not in accordance with our findings in cases of known compression of sciatic nerves, the absence of any appreciable parametrial induration in many cases is hardly compatible with pressure from malignant masses, and the existence of numerous cases with bilateral parametrial solidity (the so called "frozen" pelvis) unassociated with any pain whatever All these tend to discredit a theory that is popular because it is so easily comprehended It is interesting to note that the [illegible] objective phenomena that have been demonstrated are compatible with a nerve root lesion rather than trunk one Another common assumption should, I think, also be discarded—namely, that the pain is due to metastases in the pelvic bones In none of my cases has there been any radiographic evidence of bone metastases, and from a very large experience Hurdon (1937) states that such metastases are extremely rare

The possibility of these cases being examples not of direct but of referred pain must be next considered. The absence of a visceral lesion, the type and unilateral distribution of the pain, and in particular its usual root distribution in most cases (as will be shown later) being distributed between lumbar 2 and sacral 2 where there is no autonomic inflow or egress—all tend to disprove this possibility Added proof is given by the relief that follows epidural injections, and the failure of sympathectomy in this type of case.

We are left with two alternative possibilities of functional pain and somatic pain Functional pain can only be diagnosed by a process of exclusion, and unquestionably in a large number of these cases there is a superimposed functional element once the pain has persisted for any length of time (I think this partly explains some of the failures after intrathecal injection of alcohol The bulk of the evidence supports the conception of the pain as somatic, by which is meant merely that it arises from some lesion in the distribution of the peripheral nervous paths and is correspondingly appreciated Possible sites of origin of the pain are the peripheral nerve endings, the cutaneous nerves, the nerve trunks, and the nerve roots The first two can be excluded in the absence of any recognisable peripheral lesions, the third is the generally accepted cause, and the fourth is the one I am postulating The arguments against the pain being due to involvement of the nerve trunks have already been detailed, but the possibility of an infective process has not been excluded—the majority of parametrial infiltrations are inflammatory—and the possibility of a neuritis of the trunks traversing the pelvis is quite real, but in view of the clinical picture actually found and the absence of any histological proof it is, at anyrate, unlikely to be common It is noteworthy that similar limb pain is exceptional in cases of parametritis where the most massive parametrial solidity is found. This leads us to the fourth possibility—namely, a root origin The clinical picture is not that of a trunk neuritis, but rather resembles a root lesion in the few cases where objective phenomena have been present—e g, hyperæsthesiæ, ill defined paresis, and some wasting of muscle groups—although admittedly such signs are uncommon The nerve roots involved are mostly not those belonging to the nerves connected with the pelvic lesion, and this would seem to force us to postulate some remote lesion rather than a proximate one, and I suggest, tentatively something in the nature of a radiculitis Histologically there is no definite evidence of this although the spinal cords I have examined microscopically have all shown excessive hyperæmia of the vessels around the roots and in the substance of the cord adjacent Granted the existence of an inflammatory focus in the pelvis

—and this is usual with cervical cancer—an inflammatory root lesion could occur either as a metastatic process or as a result of the direct spread of infection via the perineural lymphatics. Since the nature of the actual lesion has to be demonstrated first such conjectures are at present premature The absence of any definite histological lesion does not necessarily exclude a radiculitis. Therapeutically the success attending methods aimed at interrupting the afferent pathway at the level of the nerve-roots does not disprove the possibility of a more peripheral origin of the pain and it would be necessary to interrupt the nerve trunks without giving relief in order to prove that the pain was arising higher unfortunately this is impracticable.

The arguments in favour of some such nerve-root lesion in brief are: (1) the clinical picture if anything is that of a root lesion (2) the roots affected are usually those remote from the trunks related to the pelvic lesion; (3) the histological findings are equivocal but not necessarily contrary and (4) therapeutic methods applied to the roots are strikingly successful. The success of such therapy does, at all events, prove that the cause of the pain is distal to the posterior nerve-root ganglia. For the present such a theory provides at all events, a useful working hypothesis.

DIAGNOSIS AND TREATMENT

The clinical problem must now be discussed. It will be seen from the foregoing argument that the essential preliminary to rational therapy is accurate diagnosis of the type of pain inasmuch as two distinct afferent pathways are concerned. An attempt will be made to indicate how this may be achieved.

Visceral pelvic pain may be described briefly as one of inexact localisation and, sometimes diffuse radiation with no objective neurological signs, but with a recognisable lesion in an appropriate viscus The pain is bursting or spasmodic, and is usually intermittent with frequent colicky exacerbations. It tends to be provoked by functioning of the affected viscus—e.g after evacuation of the bladder or rectum. It has no exact topographical landmarks, but is experienced as a deep rather than a superficial sensation. The pain is commonly described as bearing down especially by the parous patient, and curiously even when the visceral lesion is extra-uterine. In the severer cases radiation to the thighs is not infrequent, and without care confusion may occur with somatic pain: radiated visceral pain is however nearly always bilateral and the localisation is fairly constant to the front and upper part of the thighs. In most cases the diagnosis can be made on the subjective phenomena alone, but in all it should be confirmed by careful clinical and neurological examination.

Once the visceral nature of the pain is definitely decided the treatment becomes fairly straightforward —there are two alternatives, either to section the afferent pathway or to operate directly on the viscus concerned. The method to be adopted depends to a certain extent on the particular type of lesion as I hope to show in the cases to be described. In all cases sympathectomy would suffice and would probably be the sole treatment adopted were there not other factors of themselves demanding local treatment. In practice I think that sympathectomy should be reserved to those cases where it is not possible to deal directly with the visceral lesion.

I have treated 15 cases of severe visceral pelvic pain to date. In 4 relief of pain was obtained by direct methods while in 11 it was necessary to carry out presacral neurectomy The first four cases were briefly (1) Rectal pain and tenesmus associated with ulceration and stenosis here a colostomy produced relief (2) Necrosis of uterine wall following gross over-dosage with intra uterine radium in the treatment of menorrhagia relief followed panhysterectomy (3) and (4) Severe bearing-down pains ensuing five and eighteen months respectively after treatment of a cervical and a body growth in each case evacuation of the pyometra that had developed was sufficient to give relief

Relief by presacral neurectomy of severe pelvic neuralgia associated with advanced carcinoma of the cervix has been reported by Cotte (1932) Bernard and Theodorescu (1928) Bohney (1935) Jung and Lucinescu (1934) de Grisogond (1929) and Paolucci (1928) among others In the present series of 11 cases presacral neurectomy was carried out 5 times for the pain associated with a chronic rectal reaction (in which cases it was also hoped that the increased vascularity resulting would accelerate the healing process) 4 times for advancing malignancy involving the bladder and causing extreme dysuria, and in 2 cases where no precise visceral lesion had as yet developed, but the clinical picture was that of visceral pain with extensive gland metastasis and sympathectomy relieved it. In every case so far the results have been most striking being immediate in their onset and more or less permanent in their effect. There has been no operative mortality in these 11 cases though they were mostly poor subjects, and the results have been so gratifying that I think the operation is now justified in less advanced malignancy once definite visceral pain has developed.

A number of failures following sympathectomy have been reported and to a certain extent the operation has fallen into disrepute. I think the reason for this is that the wrong type of case has been operated upon if sympathectomy is carried out on a case of somatic pain it will necessarily fail, for the sympathetic path is concerned with visceral pain alone. Another cause of failure is incomplete division of the nerve, or more correctly, plexus this also is common When carried out on the right type of case the operation is as successful as any in surgery The only complication I have seen following it was a transient incontinence of urine and fæces. The only argument I can see against its performance is the possible effect of the increased vascularity expediting the growth of the tumour it is diametrically opposite to the old treatment of starvation ligature, where deprivation of the blood-supply to the malignant growth was used to arrest its progress

Somatic limb pain may be described briefly as pain experienced fairly exactly in the distribution of one or more spinal nerves, and due to stimulation of the respective afferent pathway at some point between the sensorium and the peripheral sensory end organs. It is accurately localised—in striking contrast to visceral pain—and is of a shooting stabbing or throbbing type It is frequently likened to the neuralgic pain of toothache in these cases It is more or less continuous, with periods of exacerbation mostly either at night or after movement Objective neurological signs are not infrequently found. The most common (in the cases associated with advanced pelvic malignancy) is hyperæsthesia of the skin in the distribution of the pain—often there is an appreciable tenderness of the underlying muscles similar to the condition found in the anterior abdominal wall in association with acute inflammatory conditions in the abdomen.

All of the 18 cases of somatic limb pain investigated so far were associated with advanced carcinoma of the cervix which had been treated by means of irradiation, and all fulfilled the arbitrary criteria of severity previously outlined. When each case was examined I made a note of the nerve roots corresponding to the distribution of the pain, and the Table shows the results It will be seen that no less than two thirds of the cases are in the distribution of the lumbar roots only, which is contrary to the generally accepted view that the severe limb pain associated with advanced pelvic malignancy has its origin in the sciatic nerve In my experience it has been the exception rather than the rule for a sciatic root distribution to occur

Table showing Root Value of Somatic Limb Pain (18 Cases)

Root value	No of cases	Root value	No of cases	Root value.	No of cases
L 1	1	L 2–4	2	S 1, 2	1
L 1–3	6	L 2–5	1	S 1–3	1
L 1–S 2	1	L 2–S 2	1	S 2 3	1
L 2, 3	1	L 2–S 4	1	S 3, 4	1

As stated, objective neurological signs were not frequent, most common was the presence of definite hypersensitivity to pain stimuli in the involved root distribution, or part of it, in 7 cases deep pressure causing quite severe pain in the affected areas In 5 of these cases there was recognisable paresis of the muscle groups supplied by the affected roots, and in 2 others this paresis was accompanied by limited areas of anæsthesia extending over the whole of one lower limb, up to the upper lumbar region behind, and the 10th dorsal level in front In 13 cases the parametrium on the affected side was infiltrated to the pelvic wall, but in the other 5 cases, although appreciably involved in all, the induration stopped short of the pelvic wall and, presumably, in these instances the peripheral nerves could not be subjected to pressure as they traversed the pelvis A radiogram of the lower lumbar spine and pelvis was taken in every case, but never demonstrated any bone metastases At autopsy 3 cases did not show either macroscopic or microscopic involvement of the nerve trunks traversing the pelvic cavity Leucocytosis has been present in some of the cases, but usually in association with an inflammatory reaction in the pelvis In all cases cystoscopic and proctoscopic examination failed to reveal any visceral lesion that might have caused pain, and ureteral obstruction or pyometra were also excluded

In the light of these clinical observations, the assumption that this type of pain was due to bone metastases or pressure on the lumbosacral plexus appears largely incorrect, and has an important bearing on the therapeutic measures to be adopted. If either of these were causal, the obvious method of treatment would be by deep X ray therapy which, empirically, has been found of temporary value; but if we are dealing with some lesion of the peripheral nerves or their roots then different measures are required. This led me in the first instance to treat these cases by means of epidural injections of novocain and saline, with quite satisfactory immediate results in the majority, but recurrence of pain within six to eight weeks in most There are two other ways of interrupting the afferent path—namely, by cordotomy and intrathecal alcoholisation of the affected roots Learmonth (1935) considers surgery is justifiable in those cases where the operation risk is reasonable and where the expectation of life is compatible with that risk. I know of several such cases successfully operated upon on the Continent, but few of our cases would fulfil his first requirement. Intrathecal alcoholisation is a method of treatment which was introduced by Dogliotti (1931), and has been elaborated by numerous workers since, chiefly American The method is relatively minor and apparently safe, it has given satisfactory results in the majority of the reported cases (Stern 1934, Depuy 1935, Saltzstein 1934, Greenhill and Schmitz 1935, Russell 1936), provided that precautions are taken not to affect the sacral roots, whence arise bladder disturbances (Ewer 1935) In view of the reported successes I was stimulated to give the method a fair trial and I can report on 24 injections given to 18 patients

TECHNIQUE OF SUBARACHNOID ALCOHOL INJECTION

It is inadvisable to give any premedication, lest the immediate effects of the injection should be obscured

The patient is placed on the side opposite to that on which most of the pain is felt The bed is blocked at the foot, one or more pillows being placed under the pelvis to elevate the sacral and lumbar spine The back is arched and the body turned somewhat ventrally By placing the patient in this attitude we raise the sacrolumbar region of the spine to the highest level, and simultaneously make the posterior sensory nerve roots lie horizontally, while the anterior motor roots come to lie in a plane usually out of reach of the alcohol Even if this latter precaution is not taken the motor roots are not often affected because sensory nerves are more susceptible than motor to the effects of alcohol

The injection is made with an ordinary lumbar puncture needle introduced into one of the upper lumbar spaces, necessarily above the highest affected root Once the needle is in the subarachnoid space, 0 5–1 c cm of absolute alcohol is slowly injected, about two minutes being taken in all, in most cases 0 5–0 6 c cm suffices The alcohol arises immediately to surround the posterior roots because its specific gravity is about 0 8 whereas that of the spinal fluid is about 1 007 No attempt should be made to draw spinal fluid into the syringe to mix with the alcohol since this is exactly what is not wanted

Following the injection the patient is kept on the same side for at least an hour to allow the alcohol to fix, and the bed is better left blocked for several hours

If required, an injection can be given on the opposite side after a few days' interval.

RESULTS WITH INTRATHECAL ALCOHOL INJECTIONS

The 18 cases I have treated were all advanced cervical carcinomas which had been previously treated by irradiation.

The first case was treated over eighteen months, and the last case reported here four months, ago In all, 24 injections have been given In 2 cases a successful first injection had to be repeated after an interval of three months Of the original 18 injections, 4 were not successful, one of these patients refused to have a further injection, but in the other three the treatment was repeated with successful results, the relief lasting six, ten, and four months

The maximum period of relief so far has been sixteen months The average duration of relief up to date has been approximately five months per case per injection—and this in spite of 4 cases dying from their growths within one month of injection Clinically the most striking effect of the injections is the immediate relief that follows the first few minims injected The only untoward symptoms experienced are numbness and tingling for a few moments, followed by transient anæsthesia and paresis in the affected limb and rarely, if precautions are taken to avoid the alcohol affecting the sacral roots, bladder and rectal difficulties

The sole complications observed have been retention of urine and incontinence of fæces in two cases clearing up spontaneously in 48 hours transient incontinence of fæces alone in another case and a meningeal reaction in one other case, subsiding spontaneously in four days No late ill effects of injection have been observed as yet.

An autopsy has been made on 3 of the cases which died of advancing malignancy The findings (Dr W Susman) were

> Extreme congestion of the vessels around the nerve-roots and throughout the lower part of the spinal cord with gross thickening and hyalinisation of the vessel walls and some perivascular deposition of hyaline fibrous tissue In one case dying ten days after the injection there were many small punctate hæmorrhages in both white and grey matter at the level of the injection—possibly due to the irritant action of the alcohol on the nervous tissue or to trauma at the time of injection

The demyelinisation and posterior column degeneration reported by Ritchie Russell (1937) were not detected but in my cases the autopsies were performed within four months of initial injection at the latest whereas in Russell's 2 cases, twelve and nineteen months had elapsed. Clinically Russell reports a case injected on both sides over two years ago and showing no evidence of progressive degeneration in the cord. It appears therefore, from the little evidence at present available that these injections do not produce any gross permanent change.

SUMMARY

(1) The nature of the pain associated with advanced carcinoma of the cervix uteri has been described in detail.

(2) Two distinct types occur visceral and somatic pain with differing causation and two quite distinct methods of appropriate therapy—namely visceral pain requiring presacral sympathectomy and somatic pain requiring intrathecal alcoholisation.

(3) The importance of accurate assessment of each case before treatment is stressed in order to prevent these methods of treatment becoming discredited through being applied to the wrong type.

(4) A series of 33 cases have been investigated 15 of visceral and 18 of somatic pain and in 1 case only did the appropriate therapy fail to give relief.

(5) The adoption of such rational methods of therapy should make it possible to dispense almost entirely with opiates in the terminal phases of uterine malignancy

The research is being continued in particular with regard to the cause of the limb pain and in study of any late effects of intrathecal injections of alcohol.

This work has been carried out in connexion with a research fellowship at the Christie Hospital and Holt Radium Institute Manchester I wish to express my deep appreciation to Prof E D Telford and Dr Ralston Paterson, who have sponsored it Four of the presacral neurectomies were carried out by Prof Telford or his assistant Mr H T Simmons the other seven, and all the alcohol injections were done personally

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TECHNIQUE OF SOMNIFAINE NARCOSIS

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The treatment of mental disorder by the continuous administration of narcotics over a period of one to three weeks has been in vogue on the Continent for many years and the most commonly used drug for this purpose is Somnifaine which may be described as a mixture of barbitals (or barbituric acid derivatives) in a *glycerin alcohol water solution designed for administration by the oral intravenous or intramuscular routes*

No clinician who has given prolonged narcosis a fair trial doubts that the treatment is beneficial. Where opinions differ widely is on the question whether the therapeutic advantage is worth the risk. If only a safe technique could be evolved continued narcosis would be more widely adopted. The present paper is an attempt to describe such a safe simple method which can be used by anyone with ordinary care and attention to detail

CHOICE OF TECHNIQUE

Broadly speaking there are three common methods of inducing and maintaining narcosis

Klasi's original technique (1921) was unfavourably reported upon by Dawson and Barkas in 1925 The narcosis was initiated by a preliminary injection of morphia and scopolamine, followed by two ampoules (4 c.cm.) of somnifaine given intramuscularly Further injections of somnifaine were given at irregular intervals when the patient showed signs of awakening The idea was to maintain unbroken sleep for 8–10 days Such a deep narcosis however inevitably led to a high fatality rate especially when conducted by those inexperienced in the use of narcotics, and so the method had fallen into disuse

The second technique is described by Meerloo (1933) who gives an excellent account of the *continental practice* He disregards sleep altogether and concentrates his attention upon gradually producing a barbituric acid intoxication working upon the theory that sudden disintoxication when the drug is withdrawn is the most important therapeutic factor Avoidance of dangerous secondary complications by beginning with small doses of the drug and slowly working up to the maximum is the essence of this method More or less continuous sleep may be *achieved* but no attempt is made to hurry the patient into a profound narcosis The injections are given at irregular intervals and the diet is mainly liquid

The third method introduced into *this* country by Ström Olsen (1933) differs from the others in that he claims to have eliminated all toxic complications by *giving injections of* insulin in conjunction with somnifaine His theory is that a disturbance of the carbohydrate metabolism of vital organs occurs during prolonged narcosis with somnifaine Following the usual practice he gives the injections at irregular times as the patient awakes and strictly adheres to a liquid diet

Interest was aroused by Ström Olsen's work, and many physicians attempted prolonged narcosis with the additional safeguard of insulin But in 1935 Parfitt (1936) using the insulin somnifaine technique had 2 deaths in 45 treatments In spite of this he expresses the opinion that the use of insulin is an advance in treatment

In the spring of 1935 six cases were given somnifaine and insulin in Plymouth Mental Hospital and the results were so alarming that the treatment was quickly abandoned. Pyrexia, tachycardia, dangerous coma, and threatened collapse followed so rapidly one upon the other that great dissatisfaction was experienced with the treatment Possibly the technique was faulty from lack of experience, but the impression was gained that insulin increased the patient's excitement and feelings of apprehension. A year later in 1936 prolonged narcosis was again started following Meerloo's method with important modifications In that year 100 cases were carried to a successful termination without a fatal result, and very few alarming complications

Most writers are impressed with the danger first, of giving somnifaine at regular intervals during the day, and secondly, of feeding the patient on solid or semi solid diet The risk involved in the first instance is presumably overdosage of the drug leading to coma, and in the second aspiration pneumonia resulting from bulbar paralysis, which is one of the effects of the drug

The method we have evolved in Plymouth differs from that usually advocated in that these dangers are regarded as illusory The advantages of giving injections at stated times and of feeding the patient on the usual hospital diet are clear There is no disturbance of ward routine, the medical officer can easily inspect each patient before ordering a further injection, and the patient is in no danger of starvation The secret of success is to regulate the dose by clinical observation of the patient's condition, and to insist upon the patient being aroused at the regular hospital meal times The patient must be made to sit upright in bed when feeding (or being fed by the nurse), and must be supported upon a commode when attending to the personal needs. By this means the chances of aspirating food are almost negligible, and the danger of pulmonary congestion from prolonged recumbency is obviated. These points will be referred to again in the detailed description of the method.

THE METHOD DESCRIBED

The patient can be nursed in an open ward with other patients of a quiet type Isolation in a special ward with darkened windows is not essential, and sufficient privacy can be secured by screening off the beds of the patients undergoing treatment Noisy and excited patients may require a single room for the first week until they are fully under the narcotic Afterwards they should be transferred back to the open ward. A nurse should always be present, and on no account must the patient be left unobserved. After the first few cases the nursing staff quickly gain confidence and are able to detect at once the signs of overdosage Before each injection the patient should be examined by the physician who decides whether to order or to withold the fresh dose Regulation of the dosage according to the patient's condition is the essence of the method. Working upon the assumption that the action of barbital is mainly upon the nervous system, and knowing from clinical experience of veronal that the drug is cumulative, careful watch must be kept upon the rate of administration Sufficient time must be given for the patient's excretory mechanism to adjust itself to the extra load. Always bear in mind that the minimum lethal dose of the drug is very near to the optimum therapeutic dose in prolonged narcosis The details of the method are as follows

On the first, second, and third days of treatment 2 c cm only of somnifaine are given each day by intramuscular injection at 2 P M after the patient's dinner This small dose should produce 3–4 hours' sleep or less, and in some cases the patient is made more excited Restlessness may be controlled by paraldehyde by mouth or by rectum On the fourth day 2 c cm of somnifaine are again injected at 2 P M after he has had a full dinner and has passed urine The same evening, after he has had the usual tea-time meal and again passed urine a further 2 c cm of somnifaine are given at 7 o'clock, making a total of 4 c cm in 24 hours Provided that everything is going well—the temperature, pulse, and respirations are normal, the patient is not too drowsy, is able to swallow without difficulty, and is not retaining urine—the dosage of 4 c cm is repeated on the fifth, sixth, and seventh days in divided doses of 2-c cm given at 2 P M and 7 P M each day It will be observed that the drug is given at regular intervals and that no somnifaine is administered during the night, so that the patient has a clear space of 19 hours in which to excrete the doses already given Should the patient awake or be restless during the night the nurse has instructions to give paraldehyde in doses of 2 drachms

The eighth day is the most critical time and the physician must decide whether the patient can tolerate more than 4 c cm in 24 hours In practice it will be found that patients can be divided into three classes (1) a small weakly group who are rendered drowsy, limp, and ataxic by 4 c cm of somnifaine in 24 hours, (2) a larger group including most individuals in robust health, who can easily tolerate 6 c cm in 24 hours, and (3) another small group of exceptionally resistant patients who can deal with 8 c cm in 24 hours without becoming profoundly intoxicated If group 2 or 3 is indicated a third 2 c cm of somnifaine may be given with safety at 10 A.M after breakfast on the eighth day, making a total of 6 c cm in 24 hours, given in divided doses of 2 c cm at 10 A.M, 2 P M, and 7 P M Should there by any doubt it is wise to carry on with 4 c cm for a few days longer If the patient falls into group 1, easily recognised by their extreme drowsiness and ataxia, then the narcosis is continued with a maximum of 4 c cm in 24 hours

TABLE I—*Complications*

—	Men	Women	Total
Total cases	47	53	100
Complications— Slight vomiting	8	11	19
Retention of urine (No catheterised in parentheses)	1 (0)	5 (3)	6 (3)
Pyrexia (99°–100 F)	13	15	28

MINOR COMPLICATIONS

Just about this time—i e, the seventh day—when the question of maximum dosage arises symptoms of mild intoxication may appear The most important are (1) a tendency towards nausea and vomiting, (2) retention of urine, (3) slight pyrexia up to 100° F Since we are dealing with a narcotic drug the only safe procedure is to reduce the dose until the danger is past No theoretical considerations of the therapeutic advantages of continued sleep should allow us to risk continuing the injections Although the patient may appear to waken up when the dose is temporarily reduced he does not remember this afterwards when the narcosis is ended The incidence of these complications in the present series are shown in Table I

Vomiting can easily be controlled by the subcutaneous injection of atropine sulphate gr 1/100 as advised by Meerloo in addition to omitting one or two doses Since adopting the above simple procedure narcosis has never had to be terminated because of persistent vomiting

Retention of urine is never serious if the patient is given ample fluids to promote diuresis and the nurse is instructed to raise the patient to an upright or sitting position during micturition The catheter should never be used and, if only a little more patience had been exercised, need not have been passed in the three cases mentioned. The golden rule is to suspend the drug and wait 24 or 36 hours until the bladder empties. Anuria or oliguria is never found where the dosage of somnifaine is properly regulated. About the seventh or eighth day the daily excretion may be reduced, but afterwards diuresis sets in and large amounts exceeding 100 or 150 fluid oz. may be passed. A 24 hour specimen should always be collected. The usual experience is that if the patient is excreting ample quantities of urine the narcosis may be continued without fear of unpleasant incidents.

Pyrexia up to 100° F is not regarded as a serious complication and needs no treatment beyond suspension of the drug for a few doses The pulse-rate usually increases to 90 or 100 before the temperature rises and is a useful check upon the patient's condition. As will be seen later higher temperatures up to 102°–103° F are an indication for stopping the treatment altogether

DURATION OF TREATMENT

Having gradually worked up to the maximum daily dose this should be continued for about 14 days if the patient will tolerate this amount of the hypnotic. On the 21st day the dose is gradually reduced until by the 23rd day the course of injections is completed In most cases the patient is out of bed in a week. Thus the treatment requires about a month in bed.

If these figures are further examined it will be seen that the patient receives injections of somnifaine for approximately three weeks the first week is to be regarded as the period of induction of narcosis, the second two weeks are the period of full intoxication the last three days are the period of withdrawal of the narcotic In practice we have found that the patient has almost complete amnesia for the period of induction so that the duration of the prolonged narcosis is approximately three weeks This result compares favourably with the 10–14 days narcosis attained by most workers in this country and abroad.

MAXIMUM DOSAGE

Recent communications from the insulin-somnifaine clinic at Cardiff (Hennelly 1936 McCowan 1936) show that now they rarely give more than 4 c.cm. daily This contrasts with the statement of Ström Olsen that the average effective dose is 5–6 c.cm per diem. Meerloo remarks that the original dosage of 8–12 c.cm a day has been reduced in time to an average of 2–4 c cm somnifaine a day with corresponding diminution in the number of successful treatments It is evident that the addition of insulin has not arrested the downward trend. Careful analysis of the case-sheets of the 100 cases treated in Plymouth shows that 22 patients received 4 c cm daily 72 had 6 c cm. daily; and 6 patients only had 8 c.cm daily

If we add the 7 days induction period to the figures for maximum dosage the actual duration of narcosis in 100 cases was 14–17 days in 28 cases, and 21 days in 72 cases Table II shows the number of patients with the approximate periods of maximum dosage

TABLE II—*Maximum Dosage of Somnifaine*

Maximum daily dose (c.cm)	No patients with maximum dose for—		Total.
	7–10 days.	14 days	
4	15	7	22
6	12	60	72
8	1	5	6

The statement made earlier in this paper that patients can be divided into three groups from the point of view of their tolerance for somnifaine is thus borne out by case analysis The weakly asthenic type who can deal with at the most 4 c.cm. somnifaine daily are examples of idiosyncrasy to the drug when given a large dose without preparation.

INDICATION FOR STOPPING TREATMENT

The only reason for abrupt termination of the narcosis in this series was pyrexia of 103° F or over with accompanying tachycardia Four women had the treatment cut short for this reason on the 17th 14th, 16th and 19th days respectively There is complete agreement amongst all workers upon the danger of continuing narcosis when the patient has a high temperature. Disturbance of the temperature-controlling centre in the hypothalamic region is usually regarded as the cause of the fever An additional reason for ending the narcosis when the temperature rises is that there is always the fear that the patient may be developing a broncho-pneumonia, which is not easily recognised in its early stages. The only other indications for stopping the injections are extreme drowsiness with inability to swallow or increased restlessness and excitement If the patient has had a fair period of narcosis of approximately 14–17 days there is no object in pursuing the treatment and running the risk of coma and death from barbital poisoning

Should these complications occur earlier in the narcosis the correct procedure to suspend it temporarily When the danger is past the drug may be resumed with doses of 2 c.cm. daily working up to the maximum as before. Some excited patients cannot be given prolonged narcosis with any degree of safety and in these cases the attempt should be abandoned. The dangers of trying to quieten continuously a restless and resistive patient by means of narcotics are too obvious to require further comment

DEATHS

Meerloo quotes examples of fatal results from relatively small doses of somnifaine to show the danger of proceeding with the narcosis in patients who have an idiosyncrasy to the drug and are of an asthenic constitution. Much may be learnt also from analysis of the dosage given to fatal cases in this country (Parfitt 1936) One patient died after receiving 80 c cm of somnifaine in 11 days another had 12 c.cm in 3 days a third 38 c.cm. in 6 days Adopting the scale outlined previously and the method of gradual induction of narcosis these patients would have received *at the most* 48 c.cm 6 c.cm. and 18 c cm respectively These quantities are the maximum permitted, and as rigid adherence to any scale of dosage is not to be recommended, the actual amounts given might have been much smaller The only safeguard of any value is close observation of the patient, with immediate cessation of treatment at the first sign of danger

Cloudy swelling of the kidneys and liver which was found *on post mortem examination of these fatal* cases is also found in persons who have died of typhoid fever, pneumonia, diphtheria, and many other acute infections or intoxications, and is not necessarily indicative of an irrevocable change in the cell, for after the acute infection is past the cells recover their normal appearance (MacCallum 1921) No one need be deterred from attempting somnifaine narcosis by fear of causing permanent damage to the liver and kidneys

TREATMENT OF OVERDOSAGE

Many preparations have been recommended for the revival of patients with barbital poisoning including Coramine, strychnine, strophanthin, caffein sodium benzoate, adrenaline, and Icoral. To three cases who had been allowed to become comatose 5 c cm coramine was given by the intravenous route, followed by 1 7 c cm coramine with gr 1/60 strychnine sulphate every hour until the patient revived They all recovered and were out of danger in 4–6 hours If the pulse rate remained high the injections of coramine and strychnine were continued at two hourly or four hourly intervals We have not required any of the other stimulants except strophanthin, which was given intravenously in a few cases where the heart's action seemed feeble Lumbar puncture is essential in severe cases of poisoning, but was not found necessary in any of our cases

CLINICAL PICTURE

This is subject to considerable variation according to the mental make up of the patient some patients smile foolishly at everything, others are in a maudlin, sentimental state, the majority show very little emotional disturbance A few were in a delirious restless condition and these required paraldehyde to control their excitement Dysarthria, dysphagia, ataxia, diplopia, and nystagmus were present in varying degrees, and, in most patients who could tolerate 6 c cm somnifaine daily, gave no cause for anxiety It is significant that the smaller group—i.e, patients who could deal with at most 4 c cm somnifaine daily—showed a greater incidence of these nervous disturbances

The amount of sleep obtained also varied considerably according to the type of patient, and in the same patient at different stages of narcosis The majority had an average 18 hours' sleep daily It was found that the patients who had only a moderate amount of sleep benefited as much as those who slept almost continuously The importance of sleep in treatment has been over estimated. The great improvement seen in some cases appears to depend more upon the state of confusion and intoxication produced by the drug than the number of hours of restful sleep achieved Under somnifaine the harmful train of thought is broken and the patient experiences a period of protective amnesia

The nurse was instructed to rouse the patient for meals attention to toilet, bowels, &c, as it was considered that adequate feeding and proper nursing attention were of more importance than continued sleep By this means the danger of toxic complications was lessened Interruption of the narcosis (in the true sense of the word—viz, barbital intoxication) was not caused by awakening the patient at regular intervals during the day As a rule the patients dropped off to sleep immediately after a meal and the injection of somnifaine—if one should be ordered. Many patients would wake up in the mid afternoon and shout loudly for dinner, having completely forgotten that they had eaten a full meal at the usual dinner hour Loss of appreciation for time was a prominent feature of these cases and the more intelligent of the recovered patients described the treatment as a blank period in their lives Another striking feature was that depressed patients remained dejected (in most cases) up to the end of the treatment and that the change of mood occurred suddenly on the third or fourth day after the narcosis Similarly the excited patient continued talkative and restless at intervals throughout the course

Before we had much experience of the treatment, and early in the series of cases, a few patients sustained minor injuries from rolling or throwing themselves out of bed. Disturbances of colour sense occurred in two women, the patients saying that everything looked blue or green. Three men had epileptiform attacks on the third or fourth day after the injections were stopped. Two of them on further inquiry were found to have had similar attacks several years before One epileptic went through the course without a fit and has had none since, but he still retains the peculiar epileptic temperament These epileptiform seizures after somnifaine did not have any injurious effect upon the patients and have not been repeated Another patient, a case of dementia præcox, hiccupped constantly for two days but was relieved by hypodermic injections of atropine sulphate

GENERAL HEALTH

In all cases the health remained good and in many it was improved by the treatment Only 12 patients lost weight to the extent of 2–5 lb, 10 maintained the same weight, and 78 increased in weight, some gaining a stone or over This was only to be expected on the ample diet which included three pints of milk daily in addition to the usual hospital diet The nursing staff were ordered to press large quantities of lemonade, barley water, &c, made with glucose, upon the patient These results contrast with the loss of weight that is general where the patient is fed upon a meagre liquid diet given at irregular times

No respiratory complications were encountered in the series and need not be feared in a properly conducted narcosis All somnifaine narcosis was suspended when influenza was rife This is one absolute contra indication to prolonged narcosis The deeply narcotised patient is a poor subject to withstand such a grave toxic infection

THE URINE

Urinary analysis was carried out daily but did not help very much in the control of the narcosis On no occasion did the urinary findings provide an *indication for cutting short the treatment or even* modifying the dosage

Albuminuria—In the present series out of 47 men treated 13 had a faint trace of albumin on three or four occasions, one only had a trace persisting for 18 days and disappearing at the end of treatment On the women's side out of 53 women treated, 35 had a faint trace of albumin on numerous occasions which did not persist Catheter specimens were not collected, which explains the larger proportion of women with an occasional trace One woman had a cloud of albumin on the 11th day, after retention and catheterisation The albuminuria was not persistent and did not interfere with the narcosis which went on to the 17th day when it was terminated because of drowsiness and difficulty in swallowing Two patients (one man and one woman) contracted a *B coli* pyelitis during narcosis Neither had been catheterised The condition cleared up after treatment and at no time was there any danger

Glycosuria —Fourteen men and five women had sugar in the urine at some time during the course Blood examinations were undertaken on four men who had glycosuria on numerous *occasions The test was carried* out in the morning without interrupting the narcosis and in each case the fasting blood sugar was normal and the sugar tolerance was within the limits of normality The most probable explanation of the glycosuria is the excess of glucose in the diet This view is supported by the higher incidence of glycosuria amongst the men patients a fact which may be explained on the assumption that the male nurses were more assiduous in pressing glucose upon their patients At the same time it was noticed that the men put on more weight than the women Little mention is made of glycosuria in the literature

Ketonuria —Four women and one man had acetone in the urine on a few occasions only In each case the ketosis was related to dysphagia or to active refusal of food The man had to be tube fed three times because he resisted feeding Two of the women also declined food for short periods One woman had troublesome vomiting in the early stages of narcosis which stopped after treatment The last woman became comatose after morphia and scopolamine had *been injected in addition to* somnifaine In every case the ketosis disappeared when food was given

Comments —Most writers note the presence of occasional albuminuria, said to be a sign of toxic irritation of the kidneys It is of no consequence and clears up completely at the end of narcosis

The advocates of the insulin-somnifaine technique regard glycosuria as additional evidence of considerable derangement of carbohydrate metabolism (Ström Olsen 1933) There is absolutely no evidence to support this contention

No mention of ketosis as a complication of somnifaine narcosis is made by continental writers This is surprising in view of the interest in toxic signs aroused by the high mortality in the early days of the treatment It appears that this alleged ketosis (which Ström Olsen states occurred in 70 per cent of his narcosis cases before he gave insulin and glucose which he regards as evidence of grave disturbance of carbohydrate metabolism by the narcotic leading to impaired nutrition of the heart muscle and which he places first on his list of toxic symptoms) can be explained on much simpler grounds To put the matter briefly ketosis is the result of a faulty technique in which the patient is given an inadequate diet at irregular times and is permitted to sleep for long periods without food. The administration of insulin drew attention to the necessity of feeding the patient because of the possibility of hypoglycæmia glucose was given and the ketosis disappeared. The same result has been attained in Plymouth by regularly feeding the patient There is absolutely no indication for the use of insulin which only adds an extra toxic factor to a treatment which is already sufficiently dangerous In other words the action of insulin on the healthy subject is toxicological and not pharmacological

While the laboratory experiments of Quastel and Wheatley (1932) *on* which Ström Olsen partly founds his theory are of general interest they do not prove the presence of a disturbance of carbohydrate metabolism in the living subject poisoned by barbiturates. The general opinion of pharmacologists is that the action of barbituric acid derivatives is entirely upon the central nervous system (Cushny 1928) The study of prolonged narcosis lends support to this view

NURSING AND DIET

The care and the diet of the patient are of the greatest importance and I cannot do better than quote the written instructions handed to nurses on first taking over a case

NURSING AND MANAGEMENT OF SOMNIFAINE NARCOSIS

The object is to produce prolonged drowsiness and sleep closely approximating to natural sleep The patient is awakened at regular intervals for toilet, attention to personal needs &c ; somnifaine is administered by intramuscular injection in doses of 2 c cm at times ordered by the physician The patient must be under constant observation.

SYMPTOMS OF SOMNIFAINE INTOXICATION TO BE EXPECTED

The patient is limp ataxic unable to articulate properly and has difficulty in swallowing In the early stages vomiting retention of urine and oliguria are common Once the narcosis is established diuresis is usual.

IMPORTANT POINTS IN NURSING

(1) Four hourly charts must be kept of temperature pulse and respiration A rise in temperature is the signal to suspend the treatment by omitting one or two doses of somnifaine Increased pulse-rate should be reported at once

(2) The 24 hours urine must be measured and a specimen sent to the laboratory each morning

(3) A record must be kept of the amount of liquid (milk lemonade &c) consumed by the patient daily

(4) The patient must be raised at regular intervals and should be assisted on to the commode Bed pans are not to be used.

(5) When taking food and liquids the patient must be supported in an upright position Two nurses may be required if the patient is very limp Care must be taken that the patient does not choke and as a rule spoon feeding is required

(6) Diet as far as the patient can swallow solids, semi solids and liquids are given ample nourishment is essential and the patient ought to gain weight under the treatment In addition to the ordinary diet three pints of milk with glucose one tablespoonful to each glass of milk must be given at intervals during the day and night Lemonade with glucose added is also allowed The nurse should *endeavour to give the patient about 100 fluid ounces* (5 pints) of liquid in the 24 hours

(7) Bowels: simple enemata to be given on alternate days.

(8) Dosage of somnifaine is regulated by the condition of the patient Paraldehyde two drachms may be given as ordered by the doctor if the patient should be restless or have difficulty in dropping off to sleep

(9) The narcosis lasts for 14–21 days and the drug is to be withdrawn gradually

(10) Improvement is only to be expected on the third or fourth day after the injections are stopped.

IMPORTANT POINTS TO WATCH

(*a*) That the patient does not roll or fall out of bed

(*b*) That he or she is upright when feeding and is fed slowly to avoid aspiration of food particles.

(*c*) Temperature and pulse rate

(*d*) Keep a record of number of hours sleep,

ILLUSTRATIVE CASES

CASE I —Man aged 27 single bricklayer Finger amputated five weeks before admission following an accident at work. Became depressed while under treatment for this. Admitted at mental hospital as voluntary patient May 31st 1935 in an acutely depressed state with feelings of guilt relating to the circumstances of the accident Continued depressed with brief partial remissions up to Nov 2nd when he departed against medical advice Readmitted two days later profoundly depressed, sleepless, and unable to concentrate He remained idle and dejected until January, 1936, when it was decided to try somnifaine Physical condition a robust healthy young man with no signs of organic disease After trial doses of veronal to test for idiosyncrasy, somnifaine was given in 2 c cm doses by the method of gradual induction of narcosis, reaching the maximum of 6 c cm a day on the eighth day, on the next three days this was reduced to 4 c cm a day as he was extremely drowsy and had difficulty in swallowing By the twelfth day the dysphagia had passed off and the dose was raised to 6 c cm per diem On the eighteenth day temperature rose to 100 2° F, pulse rate, 104, respirations, 24, and 2 c cm only was injected Next day temperature and pulse rate were normal, and narcosis was continued with a dose of 6 c cm per day to the twenty second day, when it was gradually reduced, and narcosis terminated on the twenty fifth day

He remained depressed throughout the treatment, and when awake reiterated his belief that his case was hopeless Appetite was good Dysphagia slight after the twelfth day Ataxia, dysarthria, and nystagmus noted at intervals Retention of urine absent Urinary analysis no albumin, sugar, or acetone at any time Insulin was not given Weight increased by 7 lb On the fourth day after terminating the narcosis his mood suddenly changed to one of mild elation He felt better than he had for months past, made plans for the future, and boasted of the number of bricks he could lay in a day This feeling of well being persisted up to the day of his discharge three weeks later There has been no relapse, and he has remained at work for over a year

This is an example of narcosis carried out without a hitch and shows clearly the safety of the method of slow induction combined with close clinical observation

CASE 2 —Man aged 50 years, dockyard worker, admitted Feb 1st, 1936, suffering from paraphrenia with delusions of persecution and auditory hallucinations Physical condition spare build and in good health Always temperate in habits Blood pressure 144/94 mm Hg On the first day given 2 c cm somnifaine which made him more excitable and argumentative This dose (2 c cm) repeated on the second day when he was very restless and difficult to control On the third day the dose was suddenly increased to 6 c cm in 24 hours He slept most of the day No vomiting, pyrexia, or other complications and full diet taken On the fourth day 6 c cm somnifaine given in divided doses of 2 c cm He had some dysphagia in the evening, slept all night, and his pulse was good Next morning he was unconscious, with shallow respirations quick low tension pulse, and complete muscular relaxation Coramine 5 c cm given intravenously followed by hypodermics of strychnine gr 1/60 and coramine 1 7 c cm every hour Glucose and saline given per rectum He revived rapidly and three hours later could swallow easily and speak without much difficulty Next day he was in his usual health In view of the unfavourable prognosis of his mental illness somnifaine narcosis was not resumed and therefore this case is not included in the 100 successful treatments

This case elucidates the dangers of hurried induction of narcosis The error of technique consisted in suddenly increasing from 2 c cm to 6 c cm somnifaine on the third day when he ought to have had 2 c cm only, followed by (at the most) 4 c cm on the fourth day It is incorrect to say that the patient's life was endangered by 16 c cm somnifaine On the contrary, more than 100 c cm can be given with perfect safety provided that the dosage is cautiously increased in the first week

SUMMARY OF RESULTS

The following is a brief statement of the results obtained from somnifaine narcosis

Out of 100 cases treated 34 were discharged recovered, 16 remain in hospital improved, 50 were unchanged No patient was made worse by the treatment Of the recovered cases 5 relapsed within the year The diagnosis was dementia præcox in 23 cases, *melancholia in 37*, *mania in 10*, paraphrenia in 15, and puerperal psychoses in 6 The most striking changes were obtained in melancholia These figures compare very favourably with the results quoted elsewhere

CONCLUSIONS

The object of this paper being to demonstrate a safe technique of somnifaine narcosis, based upon sound principles, no attempt will be made at present to give a detailed analysis of the results of treatment Indeed, somnifaine therapy is peculiarly open to the objection that the patient would have recovered just as well with the month in bed without the treatment, and in early cases it is very difficult to say how far the narcosis was directly responsible for the improvement The patients were selected mainly because their physical condition made them appear suitable subjects for pro[illegible]nged narcosis, and 14 out of the 100 cases treate[illegible] or are chronic psychotics of over two years' duratio[illegible] of colo[illegible]

There are no clear [illegible]its saying[illegible]ations to the treatment Any patient [illegible]hree men ha[illegible]m grave physical disease—including [illegible]urth day after [illegible]—is a suitable subject Exceptio[illegible]them on further [illegible]y when dealing with debilitated individuals [illegible]ks several [illegible]o build Excited patients should preferably be [illegible]urse[illegible] by orthodox methods until their first excitement has subsided There is an undoubted risk in attempting to force a resistive patient into continuous narcosis

Continuous sleep is not essential or desirable Some patients sleep most of the time and are no better at the end, others have only a moderate amount of sleep and make a good recovery The mental confusion resulting from somnifaine intoxication seems to be the most important therapeutic factor

Ketosis is not a complication of somnifaine narcosis, and only appears as a secondary effect when the diet is inadequate There is no indication for insulin in addition to somnifaine, and its use only adds to the difficulties and anxieties of the narcosis

My thanks are due to Dr E G T Poynder, medical superintendent of Plymouth Mental Hospital, for permission to report these cases

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DEMAND FOR MEDICAL MEN IN SOUTHERN IRELAND —The National University Appointments Committee has just presented to the Senate of the University its first annual report The observations of the committee on the 'market' for graduates in the several *faculties*, our Dublin correspondent remarks, are instructive Contrary to expectations the openings in all directions are so numerous that the committee has been unable to fill them all The difficulties of finding employment for graduates apparently arise from the fact that many of them have taken degrees in faculties for which they are intellectually and temperamentally unsuited There were more posts available for doctors than there were graduates to fill them The committee had indeed to limit the demands reaching them by stopping all propaganda favouring the employment of medical graduates of the National University In Southern Ireland at any rate the profession does not appear to be overstocked

THE BACTERIOLOGICAL DIAGNOSIS OF WHOOPING-COUGH

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THE bacteriological diagnosis of whooping cough became a practical measure when Chievitz and Meyer in 1916 introduced the cough plate technique for isolating the Bordet Gengou bacillus (*Hæmophilus pertussis*) and their method has been in use since at the Danish State Serum Institute (Madsen 1925 Kristensen 1933) The Bordet medium prepared on aluminium plates is dispatched to any practitioner requiring it to be returned by post for incubation at the Institute Despite a necessarily variable technique in taking the cough plates—for this may be done by doctor nurse or other attendant—the results have justified the organisation of this diagnostic service In America the method is being adopted as a routine measure but in this country little progress has been made despite successful results recorded by Sugare and McLeod in 1929 and by Gardner and Leslie in 1932

Whooping cough is deservedly attracting attention as an infectious disease of major importance but as yet adequate measures for its control and prevention are not extensively employed. An important factor in control would be early diagnosis since the initial stage of the disease is highly infectious It is in this period that clinical diagnosis is difficult if not impossible and the blood picture is as yet equivocal the characteristic lymphocytosis being not apparent until the second week (Sauer 1935) The isolation of the Bordet-Gengou bacillus as a diagnostic measure, however has the particular advantage that it is most successful in the early catarrhal phase (Table I)

TABLE I

Isolation of H. pertussis *by the Cough plate Method in Whooping-cough* (*Various authors*)

Isolation of *H* pertussis (%)				—
1st week (catarrhal)	2nd week.	3rd week.	4th week.	
88 9	72 7	33 3	33 3	(Chievitz and Meyer 1916)
75	57	61	45	(Madsen 1935)
63 5	58 1	52 4	40	(Kristensen 1933)
75	67	73	95	(Gardner and Leslie 1932)
78	64	62	32	(Kendrick and Eldering 1935)
98	70	20	16	(Silverthorne and Fraser 1935)
98	65 „ (spasmodic)			(Sauer and Hambrecht 1930)

The present investigation was undertaken in an attempt to make the bacteriological method part of routine diagnosis in cases of whooping cough admitted to the North Western Hospital London The laboratory work including the preparation of the medium was carried out at the London School of Hygiene

At the outset, in November 1934 the Danish modification of the Bordet-Gengou medium, as described by Gardner and Leslie (1931) was used, with 33 per cent oxalated horse blood. Early in 1935 the blood was reduced to 25 per cent, and for a time the medium was poured on to plates in which a thin layer of 2 per cent nutrient agar was already set The number of positive cough plates obtained at this time was low particularly during the period when the medium contained only 25 per cent. of blood and was poured on to the agar base. In all 40 cases of whooping cough in the first three weeks of the disease were examined and *H pertussis* was recovered from 13 (32 5 per cent) The percentage of blood should have been sufficient for Kendrick and Eldering (1934) used less than 15 per cent of sheep's blood and Sauer and Hambrecht (1930) used 17 per cent. of horse blood although Sauer (1933) later increased the proportion to 25 per cent

In May 1935 Dr Ørskov kindly sent us details of the medium then being used at the State Serum Institute Copenhagen together with some actual plates A trial of these suggested they were superior to ours and we decided to alter our formula for the medium by omitting the lactic acid and increasing the proportion of blood to 50 per cent We were fortunate at this period in having an opportunity of discussing points in technique with Dr Gardner of Oxford and Prof Claus Jensen of Copenhagen Thereafter the proportion of positive results increased. How much this was due to the altered formula for the medium or to a general improvement in technique it is difficult to say

BORDET GENGOU MEDIUM (DANISH MODIFICATION)

Our final method of making the medium is given below

Clean and pare potatoes and cut into thin slices Add 250 grammes of the slices to 500 c cm. of tap water and 9 g of NaCl Boil till the potato slices fall to pieces replace the water lost in boiling and filter through linen. Adjust the reaction of the extract to pH 7 0 Add 500 c cm of the potato extract and 20 c cm of glycerin to 60 g of agar (Bacto) dissolved in 1500 c cm of tap water Distribute in flasks autoclave and store till required

Cool the melted agar to about 48° C and add an equal quantity of fresh defibrinated or oxalated horse blood warmed to about 40 C Mix well and place in a water bath at 48° C for 3–5 minutes Pour into Petri dishes, avoiding bubbles in order to obtain a smooth surface Incubate one plate to test for sterility; inoculate another with a stock strain of *H pertussis* as a control of growth production.

It is essential to have the medium fresh and to keep it stored in a refrigerator or ice-chest We did not use plates more than 10 days old A useful guide is the colour of the medium it should be a bright cherry red. A dark medium should be discarded.

COUGH PLATE TECHNIQUE

The technique of exposing the cough plate is simple provided the patient is coughing The natural spasm is essential we found voluntary efforts ineffective. It is usually suggested that plates should be exposed for 10–15 seconds and held about six inches away so that no mucus reaches the plate This procedure serves for the majority of cases, but occasionally in the older subject especially if there is much catarrh too heavy an inoculation is obtained and the medium may be swamped in 48 hours by secondary organisms; again in infants under six months old a plate taken in the same way may be sterile We found it helpful to prescribe a number of actual coughs for the individual case—e g over five years 6–8 coughs; three to five years, 8–12 coughs one to three years, 12–16 coughs under one year 20–30 coughs In infants the plate may be held as close as three inches from the mouth Plates taken from the beginning or the end of a spasm have an equal chance of giving positive results

Difficulty arises, however, in the early stages when bouts of coughing are brief and infrequent Various ways of eliciting a spasm have been suggested, such as a whiff of cigarette smoke after drinking cold water, touching the posterior pharyngeal wall or the larynx (Sauer and Hambrecht 1930), or pressure over the trachea (Silverthorne and Fraser 1935) In our final technique we made use of the cold drink and direct stimulation of the epiglottis in eliciting the natural spasm

PHARYNGEAL SWABS

We found that in the early catarrhal phase, and especially with infants, satisfactory inoculation of the plate was often difficult to achieve, despite artificial methods of stimulating coughing Perhaps only one plate could be obtained over 24 hours and with too light an inoculation. This meant delay in diagnosis at the most infectious period

Alternative methods to the cough plate have been tried.

Sugare and McLeod (1929) were successful in using phlegm coughed up on to a sterile Petri dish A loopful of this was spread by a bent glass rod on a plate of Bordet Gengou medium and a second one similarly inoculated from a loopful of phlegm diluted in 2–3 c cm of saline With this technique, 10 of 17 cases were positive, all but 2 in the first three weeks of illness

Kristensen (1933) tried swabs from the posterior pharyngeal wall but without success With laryngeal swabs, however, he was able to obtain positive results almost as often as from cough plates His technique was to use a sterile probe bent at 130° and passed as far down the larynx as possible, taking care not to touch the mucous membrane of the mouth or fauces The probe was inoculated on to two cough plates

We have tried methods similar to Kristensen's We first attempted to take swabs from the larynx by direct laryngoscopy using a Jackson laryngoscope, but this method was not suited to routine use We then tried taking swabs from the pharynx. Using a straight spatula, the base of the tongue was depressed fully to bring the epiglottis into view An ordinary throat swab was passed, just over the tip of the epiglottis Care was taken not to touch the posterior pharyngeal wall to avoid "gagging" Touching the epiglottis usually elicited coughing and presumably laryngeal and tracheal content impinged on the end of the swab

The swab was withdrawn without touching the fauces or tongue, and replaced in the sterile test-tube in which it was supplied. For inoculation, 2 c cm of sterile saline was added to the test-tube and the swab stirred up in it A loopful of this was placed on a plate and spread by a bent glass rod. The saline was then diluted with a further 5–6 c cm. and well shaken up, a loopful of the diluted emulsion was inoculated on a second plate and similarly spread. In this way one plate usually showed a satisfactory discrete growth of organisms

Although we describe the swab as "pharyngeal," the essence of the technique is to collect laryngeal content expelled by coughing

In the final technique adopted a pharyngeal swab was taken just before food was due, so that as long an interval as possible had elapsed from the last meal, otherwise vomiting might occur if the patient should "gag" when the swab was being taken. A drink of water was given beforehand. The taking of the swab usually stimulated coughing which might last long enough to allow cough plates to be obtained as well. If not, plates were left for the nursing staff to expose, with instructions that the child should be given a drink of water after each meal The nursing staff obtained satisfactory cough plates if one demonstrated a plate being taken and prescribed an optimum number of coughs for the individual patient

IDENTIFICATION OF HÆMOPHILUS PERTUSSIS

Colony appearance —Plates were incubated at 37° C and examined from 48 hours onward, incubation being continued in negative plates as long as five days The colonies of *H pertussis* usually appear at 48–72 hours, but sometimes are delayed until the fourth or fifth day The use of a hand lens or a colony microscope is essential in recognising and picking off the colonies We found ordinary daylight the best illuminant

On the primary plate *H pertussis* produces a tiny, raised, hemispherical, glistening pearl like colony To the naked eye the colonies are highly refractile, but with the lens appear almost transparent when first visible They may vary a little in size but are always uniform in shape Using horse blood in 50 per cent proportion, the zone of hæmolysis round the colony commonly described by American workers is not observed but may be apparent if a lower percentage of blood is used

On Bordet medium, colonies of Pfeiffer's bacillus may be very similar, but there is greater variation in size and, more characteristic still, a variation in shape, the larger colonies found growing near other organisms being rather flat and often umbilicated They are also more transparent Diphtheroids may be confusing but their colonies are larger, greyer, and less glistening

Morphology —Stained by Gram's method *H pertussis* appears as a small rather ovoid Gram negative bacillus, tending to be arranged in clumps, giving the impression of a thumb print The ovoid shape and absence of pleomorphism differentiate it from Pfeiffer's bacillus Little difficulty, however, was found in differentiation as Pfeiffer's bacillus usually did not grow in subculture on the Bordet Gengou medium we were using, or at most was a thin translucent discrete growth compared with the definite grey "aluminium paint" streak of *H pertussis* Freshly isolated strains of *H pertussis* fail to grow when subcultured on Fildes agar, in contrast to Pfeiffer's bacillus

TABLE II

Isolation of H pertussis *from 125 cases of Whooping cough*

—	*Positive*	*Negative*	*Total*
1st week	32 (86 5%)	5	37
2nd	38 (84 4%)	7	45
3rd	24 (70 6%)	10	34
4th	4 (50%)	4	8
5th	—	1	1
Total	98 (78 4%)	27	125

Agglutination —Final identification was carried out using the agglutinating method recommended by Gardner and Leslie (1931) Slide agglutination proved useful for rapid diagnosis

RESULTS

At the North Western Hospital from May, 1935, to August, 1936, 125 cases of whooping cough were examined and *H pertussis* was recovered from 98

They were all children under seven years the youngest being an infant of seven weeks The results are recorded in Table II according to the week of disease

Routine examination in each case comprised two cough plates usually taken on the same day If these were negative further plates were usually taken so that the Table includes the results of more than one examination in certain cases—e g, in 18 cases negative at the first examination further sets of cough plates were taken and positive results obtained in 5 Also included in the Table is one case in which cough plates were negative but a pharyngeal swab was positive

In the summer of 1035 we were asked by Dr R E Smith to help him in the diagnosis of a small epidemic of whooping cough in a public school and he has kindly allowed us to quote his results The 26 boys developing clinical pertussis were between the ages of fourteen and sixteen and from 20 (76 9 per cent) positive cough plates were obtained. Plates were dispatched by rail and returned to us after incubation overnight Despite the interruption in incubation by the interval of transit colonies were sometimes visible in 48 hours

Pharyngeal swabs —Pharyngeal swabs were taken in 47 cases coincidently with cough plates The results are given in Table III In 33 of these 47 the cough plates were positive and in 21 of these 33 (65 per cent.) pharyngeal swabs were positive On one occasion a pure culture was obtained One case with negative cough plates was positive with the pharyngeal swab These results show the pharyngeal swab to be less effective than the cough plate, but we feel that further practice with the technique might give results approaching Kristensen s The method has the advantage of saving time as the swab can be taken immediately whereas one may have to wait some time pending satisfactory inoculation of a cough plate particularly in the early stages

TABLE III

Comparison of Pharyngeal Swab and Cough plate Technique

Cough plate	+	+	−	−	Total
Pharyngeal swab	+	−	+	−	
No examined	21	1	1	13	47

SUMMARY

In our experience the bacteriological diagnosis of whooping cough by the cough plate method can be adopted for routine use Of 125 cases of whooping cough examined at the North Western Hospital in the catarrhal and early spasmodic stages positive results were obtained in 98 (78·4 per cent.) Over 80 per cent were positive in the first two weeks

The basis of the method is a suitable medium and a strict attention to detail is essential in its preparation. We finally used the Danish modification of the Bordet Gengou formula with 50 per cent fresh defibrinated or oxalated horse blood. Results were less successful with smaller proportions of blood but others have found 20–35 per cent satisfactory using either horse, sheep rabbit or human blood. Sauer has suggested placental blood

As an alternative to cough plates which may be difficult to obtain in the early stages, particularly in infants pharyngeal swabs were tried, using a technique analogous to Kristensen s They have the advantage that they can be taken without delay In a series of 47 cases the pharyngeal swab was positive in 22 (47 per cent) compared with 33 (70 per cent) positive with cough plates The results justify more extensive trial of the method.

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IMMUNISING FRACTIONS ISOLATED FROM *HÆMOPHILUS PERTUSSIS*

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AND

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A NUMBER of attempts have been made in recent years to isolate immunologically active fractions from bacteria by chemical means. The study of the chemical nature of such fractions is of great interest and their use for prophylactic purposes in place of vaccines consisting of the whole organism may prove to be of value *Hæmophilus pertussis* would appear to be a particularly promising organism from such a viewpoint because it is known to be antigenically homogeneous in the freshly isolated state so that one is not faced with the complexity which exists for example amongst the streptococci.

Although there have been certain attempts to break down the bacterial cell of this organism by various means there are no records of any attempts to isolate or purify any particular antigenic component and the crude products obtained do not seem to have been submitted to accurate comparative tests in regard to their immunising potency Krueger Nichols and Frawley (1033) used a preparation (undenatured bacterial antigen) which consists of the filtrate of thrice washed organisms ground in a special form of ball mill. This was stated to be non toxic to rabbits and to have immunised them against lethal doses of the living organism Miller (1034) prepared extracts according to the methods of various previous authors and tested them for ability to stimulate complement fixing antibodies in the rabbit. These ' endotoxins made by grinding dried organisms by extracting with hypertonic saline and by alternate freezing and thawing showed varying degrees of toxicity and antigenicity but their method of preparation as extracts of unknown concentration precluded any true comparison of their effectiveness and some of them probably contained bacterial bodies. Filtration through an L_3 candle rendered one of the potent extracts inactive

The work now described has consisted in the growth of *H pertussis* in bulk, the fractionation by chemical methods of the dried bacteria, and the testing of the fractions thus obtained for their ability to induce active immunity in mice against a lethal dose of living organisms subsequently inoculated.

GROWTH OF THE ORGANISM IN BULK

The strains used were freshly isolated organisms in Phase I (Leslie and Gardner 1931), and were obtained from Bordet Gengou cough plates from children with whooping cough in the L C C North Western Infectious Diseases Hospital through the courtesy of Dr James Westwater and Dr R Cruickshank, to whom our thanks are due These strains, of typical cocco bacillary morphology, were constantly tested throughout the work for full agglutinability by a Phase I antiserum and for virulence to mice by the method described below

H pertussis is a notably fastidious organism in its growth requirements, and the production in bulk of bacterial bodies presented not a few difficulties The classical potato extract glycerin blood agar of Bordet and Gengou was at first used, but owing to the large amount of blood contained it is expensive, and, further, the added carbohydrate is undesirable in view of the possible chemical analysis of fractions obtained Many fluid and solid media were tried, including hormone broths with the addition of various substances such as lung extract, cystein, and the X and V factors necessary for the growth of *Hæmophilus influenzæ*, but growth was either poor or absent, or the organism tended rapidly to change its antigenic phase The medium ultimately chosen was laked blood agar consisting of a base of heart agar prepared by the method of Wright (1934) with 1 per cent proteose peptone to which after autoclaving were added 13 per cent of horse serum and 20 per cent of a solution of horse blood laked by equal parts of sterile distilled water These proportions were found after a series of tests to produce the best results and glycerin, yeast, and cystein did not increase the growth On this medium all strains grew well in 24–48 hours and have retained all Phase I characters for many months It may be of interest to other workers in this field that organisms grown on laked blood agar prepared with a base of Hartley's tryptic digest of horse muscle instead of with heart agar prepared by Wright's method agglutinated poorly All strains tested with a Phase I antiserum only agglutinated up to 1/200 dilution, whether whole or laked blood was used, the same strains agglutinating at 1/6400 dilution with the same serum when grown on the usual medium

Roux bottles were conveniently spread with the 2 day growth of the organism from a small screw capped bottle (McCartney 1933) and were incubated at 37° C for 48 hours It was thought preferable to scrape off the growth rather than to wash off with beads, since less material was thus obtained from the medium The bacterial mass was thoroughly suspended in distilled water, then 50 per cent acetone was added, and the suspension kept at 37° C until sterile The bacteria thus usually remained 3–4 days under acetone before the results of the sterility tests were known They were then centrifuged down and dried completely in a high vacuum over phosphorus pentoxide The dried acetone extracted bodies were ground to a light brown sandy powder

We are indebted to Dr Catharine Begg, who has been responsible for the greater part of the production of the bacteria in bulk.

ANIMAL EXPERIMENTS

When the work was commenced there were few data regarding infection with *H pertussis* in mice Suspensions in Ringer were made of a number of freshly isolated strains A 48 hour growth was standardised by opacity, and 1 c cm of varying dilutions of such suspensions was inoculated intraperitoneally into groups of, usually, 10 mice Of 21 strains thus tested 17 had an average lethal dose of approximately 6–9000 million *H pertussis*, the remainder failing to kill in that dose The mice died usually in 2–3 days, rarely after the fifth day Post mortem, a sticky mucoid exudate was found in the peritoneal cavity which was congested and showed often petechial hæmorrhages In mice dying after 3 days it was common to find covering the intestine a thick yellow friable fibrinopurulent mat, microscopically seen to consist of masses of pus cells The organism was easily recoverable from spleen and heart blood.

TABLE I

—	Doses	Number of mice	Survivors	
			Number and per cent	Standard error
Controls	—	30	1 (3 33)	3 276
Immunised	6	30	13 (48 33)	9·047

TABLE II

Controls	—	20	1 (5 00)	4 873
Immunised	6	20	12 (60·00)	10 954

TABLE III

Controls	—	30	0 (0·00)	—
Immunised 1	3 of 0 2 mg	30	16 (53 33)	9 108
Immunised 2	6	30	22 (73 33)	8 074

TABLE IV

Unimmunised controls	—	30	1 (3 33)	3 276
Immunised with—				
Acetone extracted bacteria	6 of 0 2 mg	30	17 (56 67)	9 047
F68		30	17 (56 67)	9·047
Undigested residue		30	14 (46 67)	9 108
Mother liquor		30	1 (3 33)	3 276

TABLE V

Unimmunised controls	—	30	0 (0 00)	—
Immunised with—				
Acetone extracted bacteria	6 of 0 3 mg	30	29 (96 67)	3 276
F68		30	28 (93 33)	4 555
Residue		30	27 (90·00)	5 477

The lethal dose of similar suspensions killed by heating to 56° C for half an hour was about 5–6 times that of the living organisms

PRELIMINARY EXPERIMENTS IN IMMUNISATION

All our experiments were carried out on the same plan Groups of mice were inoculated intraperitoneally with the antigen under test over a period of three weeks At the end of that time 30 immunised mice along with 30 non immunised controls were inoculated intraperitoneally with a dose of living organisms sufficient to kill all or nearly all the controls. The mice were observed for 4 weeks although deaths hardly ever took place after the fourteenth day.

In the preliminary experiment a group of mice received on two successive days each week over a period of 3 weeks injections of a simple saline suspension of *H. pertussis* killed by heating to 60° C. for half an hour. Each dose contained 600×10^{6} *H. pertussis*. The mice along with the controls, 30 in each group, were infected intraperitoneally 12 days later. The results are shown in Table I. A marked degree of protection was induced, evidenced by the higher survival rate of the immunised mice.

It should follow from our knowledge of the serological identity of freshly isolated strains of *H. pertussis* that a vaccine prepared from any one strain should protect against any other. In order to test this a group of 20 mice immunised with the same vaccine as the previous group was infected with a different strain. As shown in Table II, a degree of immunity of the same order as in the previous experiment was obtained.

The next step consisted in the selection of a suitable immunising dose of the acetone-extracted and dried bacteria and the testing of the immunity conferred by them. Their toxicity was tested by injecting into groups of 10 mice doses graded from 1·0 to 10·0 mg. in suspension in Ringer. The average toxic dose for mice lay between 5 and 10 mg., probably nearer the larger figure. An immunising dose of 0·2 mg. was selected and this was injected into 2 groups of mice (1) once weekly for 3 weeks and (2) twice weekly for 3 weeks. The infecting dose was given one week later. The results are shown in Table III.

Both immunised groups showed a considerable degree of immunity and the benefit of an increased immunising dose was evident.

PREPARATION OF FRACTIONS

The dried acetone-killed bacterial bodies were submitted to digestion by trypsin at 37° C. and pH 8·5 according to the method of Raistrick and Topley (1934).

Each batch was made up as follows:—

Dried bacterial bodies 1·5 g.	water 300 c.cm.
N/10 sodium hydroxide 2·4 c.cm.	toluene, 15 c.cm.
trypsin (B.D.H.) 0·15 g.	

Half of the trypsin was added at the beginning of digestion, the other half after $2\frac{1}{2}$ days. Further small additions of N/10 sodium hydroxide were made if necessary to maintain the reaction of pH 8·5. After 5 days in all the greyish brown very opalescent liquid was freed from toluene by evaporation in vacuo and centrifuged at 4000–5000 r.p.m. until nearly free from opalescence. The insoluble residue was dried to a steel grey powder ("undigested residue"). It constituted about 15 per cent. of the bacterial bodies.

The cleared tryptic digest was passed through a Chamberland L_3 candle and the filtrate concentrated in vacuo at 45° C. Alcohol was added to 68 per cent. concentration by weight and the precipitate formed was centrifuged down and dried. This fraction, 10–15 per cent. of the original weight of the bacteria, dries to a light cream-coloured powder and is known as F68. The alcoholic mother liquor fraction containing low molecular weight protein degradation products was also isolated.

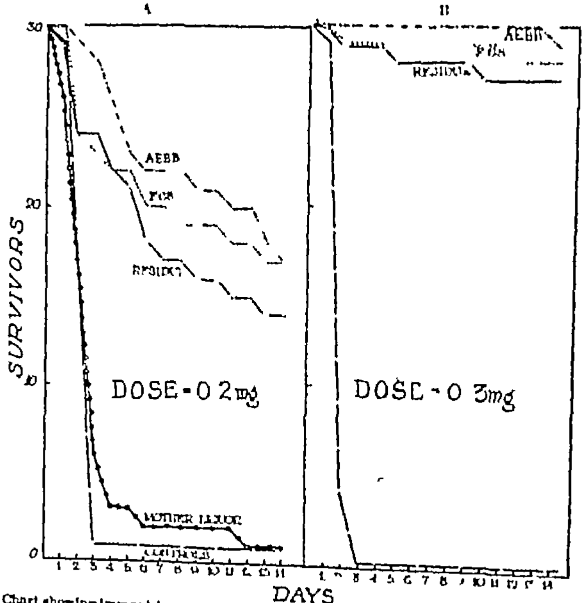

Chart showing immunising activity of fractions in doses of 0·2 and 0·3 mg. as shown also in Table IV and V respectively. AEBB = acetone-extracted bacterial bodies.

TESTING OF FRACTIONS

The immunising activity of these fractions was tested in the usual manner. The vaccinated mice received in each case 0·2 mg. of the fractions twice weekly for 3 weeks and were infected one week later. The results are shown in Table IV and Fig. A. The immunity conferred by the F68 fraction is of the same order as that conferred by the acetone-extracted bacteria and the undigested residue as would be expected is only slightly if at all less active. The mother liquor is devoid of immunising activity.

Another group of 30 mice which had received the same number of injections of acetone-extracted bacteria from a partially rough strain of *H. pertussis* gave 33·3 per cent. of survivors.

It was of interest to see whether the grade of immunity could be improved by increasing further the immunising dose and for this purpose mice were inoculated with 0·3 mg. twice weekly for 3 weeks. Table V and Fig. B show the surprisingly high degree of immunity to infection one week later, the acetone-extracted bacteria, the F68 fraction and the undigested residue all protecting over 90 per cent. of mice.

The F68 fraction

chemical nature will be a matter of great interest, but it is proposed to purify it further before subjecting it to detailed study The crude fraction has been shown, however, to be free from intact protein A 0 4 per cent aqueous solution gives no precipitate with either trichloracetic acid or sulphosalicylic acid It gives positive Molisch, Millon, ninhydrin, and biuret reactions but a negative Adamkiewicz reaction

Burnet and Timmins (1937) have recently shown that it is possible to infect mice by the intranasal instillation of a dose about a hundredth of that employed in the above experiments Death with signs of pneumonia follows in 5–12 days We have confirmed these findings and are testing our fractions by this technique of infection.

SUMMARY

An antigenically active fraction has been obtained from *H pertussis*, which appears to possess an immunising potency, as tested in mice, equal to that of whole bacterial cells derived from a virulent Phase I strain Bacterial bodies were digested with trypsin, the digest centrifuged and filtered through an L_3 candle, and the fraction (F68) precipitated by addition of 68 per cent alcohol This fraction contains no intact protein and can be stored in a readily soluble powder form

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A STABLE FERROUS SULPHATE MIXTURE FOR THE TREATMENT OF NUTRITIONAL ANÆMIA IN YOUNG CHILDREN

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Ferrous salts in the form of capsules and pills have to a great extent replaced ferric salts in the treatment of iron deficiency anæmia in the adult For babies and young children ferric salts are, we believe, still in general use owing to the instability of the ferrous salts in solution, although the greater efficacy of iron in the ferrous form is established We hope, therefore, that the following account of a series of cases treated with a stable solution of ferrous sulphate may be of interest, giving, as it does, some indication of effective dosage and the time taken to bring about cure

THE MIXTURE

The prescription used was

Ferrous sulphate	gr 1½
Dilute hypophosphorous acid	♏ ½
Dextrose	gr 15
Chloroform water to	℥i

The method of preparation is as follows —

> Dissolve the dextrose in some of the chloroform water, add the dilute hypophosphorous acid Dissolve the ferrous sulphate in some chloroform water and add to dextrose solution Make up to volume with chloroform *water*
>
> This mixture will keep for over two months at room temperature without any precipitation

We first used, five or six years ago, a solution of ferrous sulphate with dextrose only, having seen the excellent results obtained therewith by Prof L G Parsons and his colleagues For out patient use something more stable was desirable as some deposit might appear in the bottles of medicine by the end of a week Dilute hypophosphorous acid was therefore added in addition to dextrose to prevent oxidation Before the publication of the British Pharmacopœia 1932 we added dilute hypophosphorous acid to our syrup of ferrous iodide at the Queen's Hospital for Children to retard oxidation, and hence the suggestion to add it to this mixture as an extra precaution. The official B P syr ferr iod now *contains hypophosphorous acid After trials* with varying quantities of the ingredients, we adopted the prescription given above and found it satisfactorily stable

CLINICAL MATERIAL

The mixture was tried on babies and young children with nutritional anæmia attending the Queen's Hospital Excluding children who had less than 3 weeks' treatment, and 2 cases known to have had very irregular treatment, our series consists of 26 consecutive cases given the mixture We had hoped to have, or rather we had aimed at having, a considerably larger series, so that by graded doses we might establish the smallest amount which would usually cure at the maximum rate However, iron treatment is now so widely used in the districts served by the Queen's Hospital that it is difficult to collect many untreated cases of anæmia of any severity This must not be taken to imply that infantile anæmia is being banished Prophylactic treatment of babies seldom seems to be carried out systematically, so that mild anæmia is unfortunately still common, and the treatment of more serious cases is often inadequate, but *any* previous treatment rendered the children unsuitable for our present purpose Everyone who has worked with severely anæmic infants will realise that it is difficult, because of their very low resistance, to get a series uncomplicated by infection On account of the increased risk of infection in hospital wards, most of our cases were treated as out patients In spite of this about half had already, or developed later, an intercurrent infection, ranging in severity from a cold in the head to pneumonia with otitis media The infections diagnosed have been shown in the Tables, and their bearing on the interpretation of results will be considered later Out patient treatment introduces an element of uncertainty into the actual dosage received by the child, but as a check on this the mother was asked at each attendance whether or not the supply of iron given was completely finished, and we believe that in most cases the full amount, or almost the full amount, was given

About half the children were 6–12 months old and the rest were between 1 and 3 years

RESULTS

The iron mixture was given thrice daily in 1 drachm or 2 drachm doses It was always begun gradually, the full dose being reached in 3–5 days Given in this way it was always well tolerated, and there were no complaints of loose stools or colic

The results of treatment are summarised in Tables I and II the first gives the data for children ordered gr 9 ferrous sulphate daily the second for those ordered gr 4½ The cases are arranged in the order of their initial hæmoglobin levels because there is, we think, a tendency for the more severe anæmias to respond to treatment more rapidly than the less severe; and for the same reason those in Table II with an initial hæmoglobin level of 60 per cent or over are shown separately there being no corresponding cases in Table I to balance them In comparing below the results with the two doses of iron children with an initial hæmoglobin level of over 60 per cent are, for the most part, excluded In order to get as fair a comparison as possible we show the average weekly rise in hæmoglobin over the first 3–5 weeks of treatment when estimations are available after exactly 4 weeks treatment these are shown otherwise the nearest to this period As normal levels are approached the weekly rise is usually slower—a point which needs to be kept in mind

Table I shows 7 children with an average initial hæmoglobin of approximately 40 per cent who received gr 9

TABLE I—EFFECT ON HÆMOGLOBIN OF GR. 9 FERROUS SULPHATE DAILY

Case.	Age (months)	In or out patient.	First 3–5 weeks of treatment							Days taken to reach 80 % Hb.	Highest Hb level			Total duration of treatment (days)
			Initial Hb %	Days of treatment.	Subsequent Hb %	Rise in Hb	Weekly rise in Hb %	Infections &c	Weekly change in wt (oz)		Hb	When attained (days)	Other infections	
1	9	O P	38	28 N.f	80	42	10·5	Cold in head	+ 2·3	28 N f	85	77 irreg	Otorrhœa	99
2	10		38	35 irreg	85	47	9·4	Loose stools, bronchitis	+ 2·5	35 irreg	85	35 irreg		63
3	12		39	25	71	32	9·0		+14·0	46 N.f	87	60 N f		78
4	6		45	28	78	33	8·2		+ 7·7	40	90	77		77
5	30	Both	50	21	69	19	6·3	Pyrexia ? cause	?	91	83	91	Bronchitis diarrhœa	91
6	9	O.P	55	28	75	20	5·0	*Bronchitis*	+ 4·5		75	28		35
7	12		56	35	84	28	5·6		+ 4·0	49	87	49		63
Average	13·6		45·0	28·6	77·4	31·6	7·7		+ 5·5	49·7	84·6	59·6		

TABLE II—GR. 4½ FERROUS SULPHATE DAILY

UNDER 60 PER CENT HB AT THE OUTSET

8	18	I.P	25	27	63	38	9·0	Pneumonia	−0·5	42	81	42		49
9	21		41	28	57	16	4·0	Pneumonia otitis media	−1·6	81	80	81		81
10	16	O.P	42	28	70	28	7·0		+1·2	42	83	70		70
11	19	I.P	42	28	74	32	8·0		+4·6	49 irreg	82	49 irreg	Diarrhœa	63
12	22		44	21	63	19	6·7	Bronchitis 104 F	−4·2	42	85	42		63
13	11	"	45	27	71	26	6·7	Whooping cough	+7·0		71	27		27
14	9	O P	46	32	69	23	5·0		+8·1	56	82	56		84
15	31	I P	48	37	74	26	4·9	Otitis media loose stools	+2·6	63	100	85		85
16	21		49	28	76	27	6·7	Rhinitis sinusitis.	+1·1	42	85	70		77
17	12	O.P	51	1	71	20	6·7	Stomatitis adenitis.	+0·5		73	72 irreg		96
18	8		52	21	69	17	5·7		+6·2		76	49 irreg		65
19	13	I.P	52	21	81	29	6·7		+4·2	21	93	105		178
0	10	O.P	53	28	72	19	4·7		+3·7	70	80	125 N f		280
21	11		56	21	63	7	2·3		+8·2	42	93	100	Bronchitis	109
22	8		57	28	70	13	3·2		+6·8	63	82	63		94
Average	15·6		46·9	26·4	69·9	22·7	6·0		+3·2	51·1	84·2	69·7		

OVER 60 PER CENT HB AT OUTSET

23	11	O.P	60	35 irreg	74	14	2·8	Diarrhœa.	+2·8	98 irreg	80	98 irreg		210
24	13		60	21	62	2	0·7	Adenitis otitis	+ 7		62	21		91
25	34	I P	65	21	6[illegible]	17	5·7		+5·3	21	82	21		38
0	14	O P	66	28	91	25	6·2	Stomatitis	+3·0	21	105	30		178

Hb = hæmoglobin N.f. indicates that mother states nearly full quantity of mixture was given and irreg that iron was omitted for one or more days. When not otherwise indicated full dose is said to have been given daily ferrous sulphate daily All but one were treated as out-patients The weekly rise in hæmoglobin during an average period of approximately 29 days' treatment was 7 7 per cent In different children the average weekly rise varied from 5 per cent to 10 5 per cent Four of the children had mild infections

Table II shows 15 children with an average initial hæmoglobin of approximately 47 per cent who received gr 4½ ferrous sulphate daily 8 were in patients and 7 out patients The weekly rise in hæmoglobin during an average period of approximately 26 days was 6 0 per cent In different children the average weekly rise varied from 2 3 per cent to 9 9 per cent In this group, 7 had infections during the first 3–5 weeks of treatment, including two attacks of pneumonia and two of otitis media

The average number of days taken to reach a hæmoglobin level of 80 per cent was almost the same in the two groups—namely, 50 and 51 respectively in round figures (if we omit 4 children who had less than 50 days' regular treatment and who did not attain this level) Out of 26 children 19 reached a higher level than 80 per cent before discharge The average of the highest hæmoglobin levels attained was about 84 per cent in each of the two groups we have been considering Children receiving gr 9 of the iron salt took an average of 60 days to reach their maximum hæmoglobin level those on gr 4½ took an average of 67 days A rise of 1 or 2 per cent after several further weeks of treatment has been ignored, for it gives a wrong impression to say that 87 per cent of hæmoglobin was reached after 125 days of treatment, if actually a level of 85 per cent was reached after, say 42 days

DISCUSSION

The results obtained with both doses of ferrous sulphate were satisfactory After about 4 weeks' treatment the weekly rise in hæmoglobin of the children receiving gr 9 ferrous sulphate daily averaged slightly higher than that of those receiving gr 4½, but our figures do not entitle us to say that gr 9 was a more effective dose, especially as the average time taken to reach 80 per cent was about the same in the two groups The infections suffered by the group on gr 4½ were more severe—and this is reflected in the lower average gain in weight—and in some cases this factor undoubtedly retarded the rise during the early weeks of treatment However, of the 15 children in the first section of Table II, the 2 with smallest rises in hæmoglobin had no obvious infection and both put on weight well, so that it is possible that the smaller dosage of iron was a limiting factor, and that they would have done better on gr 9 daily Both were out patients, and it is of course possible that they did not receive their treatment regularly although the mothers stated that the full amount was administered

It is worth noting that in each group in spite of good response to treatment—in round figures, a rise of about 1 per cent daily in the early weeks—the average time taken to reach 80 per cent hæmoglobin was about 50 days and individual cases took much longer (4 cases which never reached this level are omitted) Moreover maximum hæmoglobin levels (which averaged about 84 per cent) were not reached until after an average of 60 and 67 days respectively (a few children would certainly have reached higher levels with longer treatment than they received) In some cases treatment, after the first month, was known to have been irregular—but the data nevertheless indicate the need for continuing steady treatment for an *average* period of about 2 months, and a good deal longer in some cases

Another point of interest is that the time taken to reach 80 per cent and over by the less anæmic children is often just as long as the time taken by the profoundly anæmic Bearing in mind the large numbers of children who get inadequate treatment, it might be helpful to impress on the mother at the outset the need for 8 weeks and more of regular therapy The presence of an intercurrent infection nearly always necessitates more prolonged treatment In our present state of knowledge it seems impossible to foretell the influence individual infections will have on the hæmoglobin level, though one knows that any infection, and particularly a pyogenic one, materially affecting the general health of the child, frequently prevents, while it lasts, any rise in hæmoglobin level with iron treatment, in spite of the presence of iron deficiency anæmia Our results leave us with the impression that during an intercurrent illness there is considerably more likelihood of a rise in hæmoglobin level if a ferrous salt is administered rather than a ferric salt, and the response to iron treatment shown by several children in this series with severe infections was striking

The amount of iron in gr 4½ of ferrous sulphate is about 60 mg —more exactly 58 32 mg We do not know whether a smaller dose would be equally satisfactory Stolleis (1937) and Glanzmann (1937) have used another stable ferrous salt solution in smaller doses They claim excellent results in babies with a solution of ferrous chloride and ascorbic acid—a preparation made by the Fabrik Promonta under the name of Ferro 66—in a dosage of 10 drops daily (Stolleis), or 15 drops daily (Glanzmann) This provides 25 and 37 5 mg of iron respectively Larger doses were used for older children Neither author gives figures which would enable the reader to judge the average rate of rise in hæmoglobin which they obtained, so that we are unable to judge how Ferro 66 compares in efficacy with ferrous sulphate solution in the dosage we have used

Among the causes for the inadequate treatment of anæmia in infants with iron and ammonium citrate and other ferric salts are (1) the large doses desirable, and the fact that when these large doses are suddenly started (instead of gradually) gastro intestinal upsets are not unusual, and (2) that long periods of treatment are often necessary The general use of a ferrous salt solution, effective in smaller dosage, and in a shorter period, should do much to make for adequate and thorough treatment

Though for *therapy* a ferrous salt has great advantages, for *prophylaxis* on a wide scale the cheap and stable iron and ammonium citrate is effective and well tolerated, and can easily be incorporated in dried milk or stored for long periods in solution—and this, in our present state of knowledge, is the drug we would advocate for routine use

SUMMARY

Hypophosphorous acid increases the stability of a solution of ferrous salt A solution of ferrous sulphate with dextrose and a very small quantity of hypophosphorous acid is stable at room temperature for over two months, and is a satisfactory mixture for the treatment of anæmia in babies

Treatment of 26 babies with iron deficiency anæmia with doses of gr 9 or gr 4½ ferrous sulphate daily produced an average daily rise in hæmoglobin level of almost 1 per cent. over the first 3–5 weeks of treatment The average rate of response in the group getting gr 4½ of the salt was slightly less than that of those getting gr 9, but the difference is at least in part due to the presence of more infection in the group getting the smaller dosage A dose of gr 4½ daily containing about 60 mg of iron is very probably as effective as double that quantity

Our sincere thanks are due to Miss Lorel Goodfellow for her help and also to Sister I M Westbrook and the ward sisters.

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A NEW TYPE OF ELECTRODE FOR USE IN THE FOURTH ELECTROCARDIOGRAPHIC LEAD

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In disease of the coronary arteries and particularly in coronary occlusion much attention has lately been paid in America to electrocardiographic precordial leads and their use is gradually coming into vogue in this country It is now clear that in anterior myocardial infarction (the T_1 type coronary thrombosis) precordial leads can not only confirm but also supplement the three standard limb leads but in posterior occlusions (the T_3 type) chest leads so far have added little or no information to that obtained from the standard curves The multiple extra leads advocated by some writers yield little more than the single precordial leads referred to later and the suggested use of œsophageal leads for investigating posterior infarctions is not likely to be adopted For clinical use the safer speedier and simpler the examination the better provided the result obtained is effective The method described below meets these requirements

THE APPARATUS

Since April 10th 1937 I have been using for chest leads a new type of electrode supplied for trial by the Cambridge Instrument Company This electrode made of German silver is circular 2 cm in diameter and its chest contact is exactly the size of a sixpence. As will be seen from Fig 1 the terminal was connected up centrally in the electrode under trial. It is proposed now to off set the terminal from the centre as likely to make the electrode more convenient to fix to the chest and to lessen the tendency for it to be levered out of position.

In private practice between April 10th and June 30th this electrode has been used in 45 out of 132 patients electrocardiographed all cases of cardiac pain during that period having been investigated by the chest lead. Experience of the electrode has been entirely satisfactory With a little Cambridge electrode jelly rubbed into the skin over the apex beat it has been uniformly easy to obtain deflections and when pushed through a slit in a short strip of adhesive plaster which is then applied horizontally to the chest wall there has been no difficulty about keeping the electrode in place whatever the position of the patient. Occasionally I have added in *sitting* patients a shorter strip of plaster applied perpendicularly Employed usually with the *patients* reclining the electrode has also worked perfectly both with patients who for reasons of convenience have been electrocardiographed in the sitting position and in orthopnœic patients examined in bed by the portable electrocardiograph

My Cambridge standard electrocardiograph having had fourteen years service is fitted with a *camera* capable of taking plates 7½ in. by 5½ in. By modifying the scale of this old type of camera it is possible to obtain four sections, each wide enough for a single lead of ordinary voltage This is impossible with the more modern cameras since these are made capable of carrying plates only 6½ in by 3¼ in which are not wide enough to permit their being divided into four sections Also the type of shutter on the newer cameras is exactly similar to that on the portable electrocardiographs and it is not possible for the width of the aperture to be varied Fortunately with the sliding type of shutter which is fitted to the old standard electrocardiograph it is possible to make the width of the aperture to any given section what one wills within the limit of the width of the plate. I am informed by the Cambridge Instrument Co that should the demand arise they are prepared to make their new electrocardiographs both portable and standard suitable for a fourth lead connexion so that in taking the record the operator will connect the four leads at once and then turn the selector switch for leads I II III and IV as required.

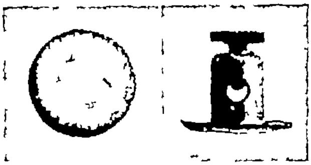
FIG 1 —The electrode full face and side view (natural size)

Meantime with the portable electrocardiograph two films have to be taken and my ordinary routine is to take one containing the three standard leads and the other recording leads I III and IV *In patients* known to have anterior occlusion this second film can be varied to include lead II instead of lead III or one section can be taken from an area of the precordium other than the apex. When a single film is being developed in a patient's house or in a nursing home more comprehensive information is obtained from a record containing leads I III and IV than from a film containing the three standard leads When it is desired to obtain electrocardiograms of chest leads from various areas this small electrode has obvious advantages over the rectangular plates measuring 2½ in. by 1½ in. that are employed at present

ADVANTAGES OF ROTH'S LEAD IV

All my chest leads have been taken by Roth's method the right arm electrode being left in situ while the left-arm terminal was attached to the button electrode over the apex or when the exact position of the apex could not be localised over the *left fourth intercostal* space near the sternal border It was found in cases where leads were taken from both these chest derivations that the curves were of similar type Apart from modification of the axis of the R–S waves which is of no practical importance Roth's lead IV gives the same result as the antero *posterior lead IV* in which the left-arm electrode is placed over the apex and the right-arm electrode *fixed posteriorly* between the left scapula and the spine Over that lead Roth's method has the advantage of the change over to take lead IV being effected without any movement of the patient. The registra*tion of lead IV* is also made more quickly for it takes only a moment to loosen the left-arm terminal and screw it into the chest electrode

Roth's method is clearly therefore the safer procedure to employ in patients who are gravely ill Anyone who has read Roth's original paper (1935) cannot but be struck by the great care with which he considered the results of other workers and his complete freedom from bias The essential conclusion he comes to in his summary, which he modestly puts forward as a "suggestion," is that a chest lead for routine electrocardiography should embody the following features —

> "(a) That its tracing record maximal deflections and that it include well defined auricular as well as ventricular complexes, (b) that its tracing be symmetrical with the standard leads, and (c) that the chest lead require but a single chest electrode The right arm chest lead has been found to fulfil these requirements "

The lead IV of Wolferth and Wood (1932), where the right arm electrode is placed over the apex and the left arm electrode applied posteriorly between the scapula and the spine, contravenes both (b) and (c) and the picture given is an inverted image of what we have for so long known as the human electrocardiogram The last objection also applies to the modification in which the right-arm electrode is kept over the apex but the left arm electrode is moved to the left foot That modification gives the same unfamiliar picture, but it does not necessitate any moving of the patient being as easy to employ as Roth's method Although, as Freeman (1937) has lately stated, the inverted image has had a long start this clinical investigation is still in an early stage, and it appears to me against common sense to adopt this inverted lead IV in this country Why must we look at a picture upside down ? That is the thesis of Willcox and Lovibond (1937), but since the lead IV which they advocate differs in no essential from that of Roth, which they used themselves in preference when patients were too ill to be moved in bed, surely the safer and quicker procedure should be chosen and, until a derivation is discovered which will give us information about posterior infarctions, Roth's method ought to be adopted as our standard lead IV

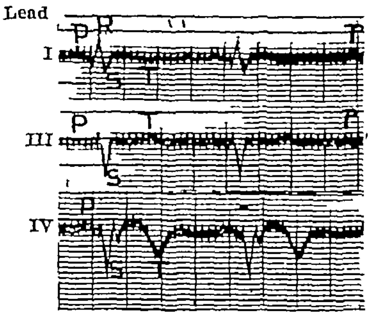

FIG 2 —From a man aged 58 Taken in bed on May 14th in the recumbent position by the portable electrocardiograph using the new electrode Coronary occlusion on May 10th. In lead I RS–T elevation is slight and the inverted T is just coming into view In lead IV the elevation is greater and already there is deep inversion of the T waves Note also how the broadened and notched S_4 supplements the slighter aberration of the initial ventricular complexes in leads I and III

RESULTS

During the period aforesaid I examined 17 cases of coronary thrombosis, 13 men and 4 women The results were as expected

In 10 out of 11 patients with occlusion of the T_1 type the findings were positive Of these 5 were seen in the initial stage and in 2 of these, who had low voltage curves in lead I and only slight R–T elevation, the distortion in lead IV was present in high degree (Fig 2) One of these 5 patients made a rapid recovery and her standard three lead electrocardiogram shows now no trace of her coronary thrombosis, but T in lead IV is still sharply inverted The 6 remaining patients were seen at later stages Of these I had examined 4 previously and taken a chest lead with the ordinary plate electrode in 3 of them Of these, 3 still have the T wave inverted both in lead I and in lead IV 1 has regained a positive T in lead I but T_4 is still negative (Fig 3) One patient had a coronary thrombosis in May, 1934, with T inverted ten days later My record three years later showed T_1 positive and T_4 iso-electric

In only one case was a discordant curve obtained He had been diagnosed as coronary thrombosis on April 1st An electrocardiogram on April 5th was negative, but a second taken on April 11th showed inversion of T in leads I and II without any RS–T distortion These records taken with a different type of electrocardiograph I saw My electrocardiogram of June 19th showed general low voltage of the ventricular complexes, initial and final T was just identifiable as a minute positive wave in leads I and II, in lead III T was flattened out and in lead IV it was a positive wave of 2 mm amplitude

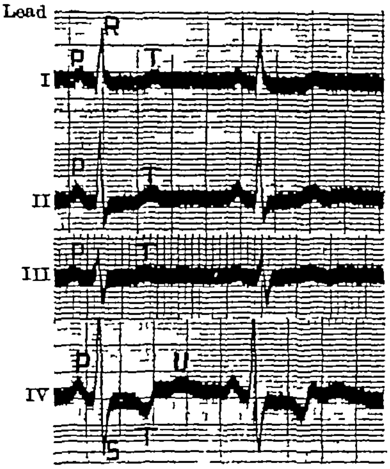

FIG 3 —Woman aged 70 Taken on June 28th by the standard electrocardiograph *in the sitting position* using the new electrode and a large plate Coronary occlusion on Feb 21st The three standard leads now show no evidence of the thrombosis but in lead IV T is still sharply inverted Note also the U wave in lead IV

In the 6 cases of coronary thrombosis of the T_3 type no additional information was obtained

In the anginal group with T inversion the readings of lead I and lead IV were not uniform Of 6 cases in which T_1 was inverted in only 3 did T_4 follow suit The remainder of the series was purposely a miscellaneous collection and included bundle branch block (both varieties), heart-block, auricular flutter, and auricular fibrillation In all the complexes were adequately recorded The W type of Q R S, the "huge" T, and the prominent U were all met

SUMMARY

(1) A description is given of a new type of electrode for chest leads, which is thought likely to meet with general acceptance

(2) An account is given of its mode of application and of the results obtained in a series of 45 patients, 17 of whom were the subjects of coronary thrombosis

(3) A plea is made for the adoption of Roth's method as the standard lead IV, because it is safer for those seriously ill, while it gives the familiar deviation similar to that in the three standard limb leads

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FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION —Courses suitable for M R C.P candidates will be given in chest and heart diseases at the Royal Chest Hospital, on Mondays, Wednesdays and Fridays at 8 P M, from Sept 13th to Oct 2nd, and in neurology at the West End Hospital for Nervous Diseases from Sept 20th to Oct 2nd Detailed syllabuses of all courses, which are open only to members, can be had from the secretary of the fellowship, 1, Wimpole street W 1

CLINICAL AND LABORATORY NOTES

A RAPID METHOD FOR THE DIRECT ESTIMATION OF UREA IN URINE

By Sydney W Cole M A

UNIVERSITY LECTURER IN MEDICAL CHEMISTRY CAMBRIDGE

(*From the Biochemical Institute, Cambridge*)

The general use of the blood urea-clearance test for renal efficiency has drawn attention to the desirability of an accurate method for the estimation of urinary urea which can be carried out with simple apparatus and which does not involve the simultaneous estimation of urinary ammonia From experience gained by noting the work of some hundreds of my pupils during the past four years I have modified the direct method I published in 1931[1] It is now conducted much more rapidly and the technique is so simple that the results obtained are the most accurate of all the quantitative methods of analysis carried out in class work

TECHNIQUE

Solutions—1 N/6 HCl prepared by diluting 100 ml of N HCl with 500 ml of distilled water

2 Acid potassium phosphate KH_2PO_4 3 per cent

3 Brom thymol blue 0·04 per cent

4 Mixed Indicator Mix equal volumes of a 0·02 per cent solution of methyl red in 90 per cent alcohol and of 0 04 per cent aqueous solution of brom-cresol green The indicators are conveniently stored in bottles carrying dropping pipettes The mixed indicator should be freshly prepared about every two months the methyl red being somewhat unstable in the mixture

5 Dilute caustic soda (about 0 1 N) in a bottle fitted with a dropping pipette

6 Mercuric-ammonium chloride Dissolve 0 5 g of mercuric chloride in 250 ml of distilled water Add 250 ml. of a cold saturated solution of pure ammonium chloride The solution should be stored in a bottle fitted with a cork carrying a 1 ml pipette that has a safety bulb above the mark. It should be labelled *Poison*

7 Urease Transfer 5 g of powdered jack bean meal to a 150 ml. flask with a narrow neck that can be sealed with the thumb To 10 ml. of the acid potassium phosphate add 90 ml of distilled water Pour this on to the meal Seal with the thumb and shake vigorously for a minute Filter through a pleated filter paper The first 10 ml. generally come through cloudy and should be refiltered The urease solution should be kept in a refrigerator when not in use When thus stored it is sufficiently active after a month but it is advisable to prepare fresh extracts every week

Apparatus—A 5 ml micro burette (A) and a 2 ml micro burette (B) These are filled to the mark with the N/6 HCl The two burettes are conveniently clamped in a double Fisher burette holder

A 1 ml pipette for the urine It is advisable to use an Ostwald pipette calibrated for delivery by blowing out after drainage

A 5 ml pipette for the urease

A can of water at 40 to 45 C

Boiling tubes 6 by 1 inch

Method—Label two similar (in diameter) boiling tubes A and B Into each measure 1 ml of the urine and to each add 3 drops of brom thymol blue

To A add 5 ml of the urease and warm gently in a flame As soon as the fluid goes blue run in acid from the A burette to maintain a green tint (about *p*H 7 the optimum reaction for urease) Continue to add the acid as required warming occasionally but avoiding heating over 45 C Generally in about 1 or 2 minutes the reaction appears to be completed Place the tube in the water bath for another 5 minutes to ensure completion of the hydrolysis of urea to ammonium carbonate Place the tube in a beaker of cold water whilst the control is being prepared

To B add 1 ml of the mercuric-ammonium chloride to inactivate the enzyme Mix thoroughly and then add 5 ml of the urease being careful to prevent any transference of mercury to the bulk of the urease Add 20 drops of the mixed indicator Titrate cautiously from the B burette through green and a steel grey to the first definite mauve tint

To A add 1 ml of the mercuric-ammonium chloride and 20 drops of the mixed indicator Continue the addition of acid to this from the A burette through grey to the first definite mauve tint This colour fades at first due to the slow conversion of H_2CO_3 to H_2O and CO_2 When the colour is permanent add distilled water to B to make the volumes of the fluids the same in the two tubes This may cause B to go grey If so add a trace more of acid from the B burette to make the colours match Should the titrations of either tube be overshot add the dilute alkali drop by drop to the more acid tube until the colour is just mauve Add exactly the same *number of drops of alkali* to the other tube Titrate the tubes from their appropriate burettes, until the colours match at a mauve tint

Calculation.—The difference between the amounts of acid required for the two tubes is a measure of the urea decomposed to ammonium carbonate in A

Since 60 g of urea give 2 mols of $(NH_4)_2CO_3$ and this is neutralised to *p*H 5 by 2000 ml of N HCl

Then 1 ml *of N/6 HCl* = 5 mg of urea

So difference in ml of acid required × 500
= mg of urea in 100 ml urine

$$\text{and } \frac{\text{Difference in acid}}{2} = \text{g of urea in 100 ml urine.}$$

NOTES

1 The urease solution can be made by extracting 5 g of the jack bean meal (about a teaspoonful) with 100 ml. of distilled water and filtering The filtrate contains more protein than in the preparation described above This protein is precipitated at the final end point of the titration and somewhat obscures the end point The cloud in the A tube is always somewhat greater than in the B tube, for some reason that I have been unable to determine With the plain water extract there is always a marked increase in turbidity on allowing it to stand in the refrigerator A good deal of this clears up on warming to room temperature

2 The urease prepared by extracting with 0 3 per cent KH_2PO_4 is rather acid generally about *p*H 5 8 It is convenient though not necessary to treat the filtrate (generally about 80 ml) with 5 ml. of a 4 per cent solution of Na_2HPO_4 $2H_2O$ (Sörensen s salt). This gives a clear solution and the initial rate of action is much accelerated

3 The optimum *p*H for urease is about 7 but it increases slightly as the concentration of urea becomes very low If desired a fluid of *p*H 7 can be prepared by mixing 6 ml. of the 4 per cent. solution of Na_2HPO_4 $2H_2O$ with 4 ml. of the 3 per cent solution of KH_2PO_4 and adding 20 ml. of distilled water About 7 ml of this can be placed in a boiling tube with 3 drops of brom thymol blue The fluid in A should be kept at about the same tint as this as near as possible If the mixture is allowed to become a deep blue and is warmed to 45 C there is a slight loss of volatile

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[1] *Biol J* 1931 22 4

ammonia and the enzymatic reaction may not be completed There is no loss of ammonia at pH 7 and with a normal jack bean meal the hydrolysis of the urea in 1 ml of a urine that contains 2 g per 100 ml. is complete in 3 minutes at 40° C

The apparatus and materials required can be obtained from Messrs Baird and Tatlock, 14, Cross street, London, E C 1

ACUTE SUPPURATIVE ARTHRITIS AS A COMPLICATION OF VARICOSE ULCERATION

By J B Oldham, F R C S Eng

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SENIOR SURGEON BIRKENHEAD GENERAL HOSPITAL

The modern treatment of varicose ulceration by adhesive elastic bandages has given such uniformly good results that we are inclined to forget even the possibility of complications and for that reason I am recording the following case

The patient, a man aged 61 years, had suffered from varicose ulceration of his legs for over 20 years When in the army in 1915 he underwent an operation for varicose veins in the left leg but the trouble soon returned and another operation was performed in 1923 In 1924 ulceration started in the right leg and since then he had been in hospital once or twice a year

He was readmitted in September, 1936, when I saw him for the first time Though he looked much older than his years his general condition was good There was marked varicosity of the internal saphena vein on both right and left legs The right leg showed the scars of healed ulcers On the inner side of the left leg there was a deep ulcer about four inches long by three inches wide I was informed that on previous occasions elastoplast bandages had not agreed with him, so after injecting the internal saphena vein on Sept 23rd he was kept in bed On Oct 6th I decided to try the effect of an elastoplast bandage When it was removed on Oct 20th I found a slight dermatitis After a few days in bed and the application of calamine lotion the dermatitis was relieved and another elastoplast bandage was applied

On Nov 2nd he complained of pain in his left elbow joint The joint was found to be swollen, hot and tender and any movement caused pain The man was toxic-looking and his temperature 100° F

When the elastoplast was taken off the leg was found to be acutely inflamed in the region of the ulcer The lymphatic glands in the left groin were enlarged and acutely tender Smears from the surface of the ulcer showed on culture a free growth of hæmolytic streptococci The elbow joint was aspirated and 2 c cm of pus removed, this pus also showed pure cultures of streptococci, identical with those from the ulcer

Hot fomentations were applied to the leg and 5 c cm of Prontosil were injected daily for 5 days The joint was aspirated on Nov 3rd and 4th Within three days the temperature began to fall and by Nov 10th it was quite normal The condition of the elbow improved rapidly and a week after the onset of the arthritis the joint was painless, though its movements were very limited

A month later the movements of the elbow-joint were normal and the ulcer on the leg had practically healed

The two interesting points in this case are (1) the occurrence of a suppurative arthritis as a complication of varicose ulceration and (2) the quick and complete cure of the arthritis by repeated aspiration and injection of prontosil

NEW INVENTIONS

A REBREATHING VALVE FOR USE WITH MAGILL'S GAS-OXYGEN-ETHER MACHINE

In course of a long series of general anæsthetics given in private practice with a modified Magill's apparatus to patients of a comparatively high average age—70 and over—I was impressed with the idea that some form of valve whereby rebreathing could be, if necessary, instantly stopped and completely controlled would be of considerable value Although no exact records are available, my experience has been that with these old people, such as old men with prostates, the tendency is for cyanosis to develop rapidly, so that in many cases oxygen has to be supplied very freely to keep a good colour with adequate relaxation

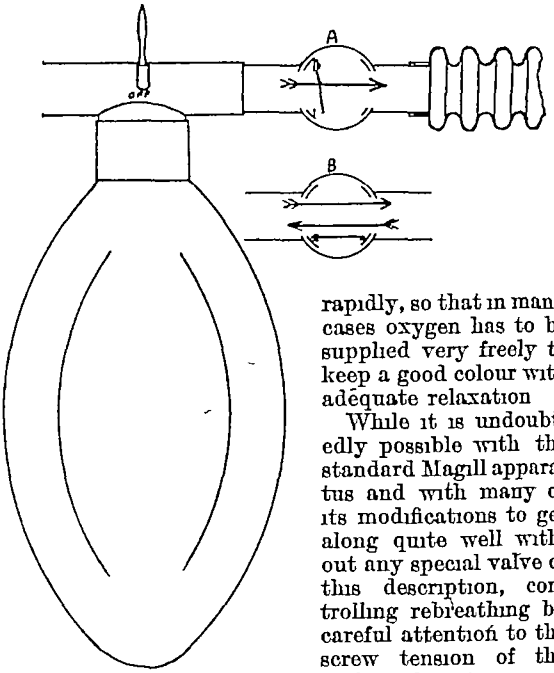

Diagram showing valve fitted between bag and wash A valve in action B valve out of action

While it is undoubtedly possible with the standard Magill apparatus and with many of its modifications to get along quite well without any special valve of this description, controlling rebreathing by careful attention to the screw tension of the outlet valve, it occurred to me that a simple non return valve, fitted at the bag outlet, might be of considerable value, and the one illustrated was made by Messrs A. Chas King Limited, London It consists essentially of an internal barrel, capable of rotating through 90°, fitted with a single-sheet rubber non return valve of the conventional butterfly pattern It works very well indeed in practice in that it is helpful in controlling the depth of respiration, there being no rebreathing in the " on " position and as much as the operator may require in the " off " It controls the exact degree of inflation of the bag, without having to take the mask off the face or having to fiddle about with the gas supply valves, thereby upsetting the composition of the mixture It is also of value in the event of the sudden onset of cyanosis, as immediately the valve is kept full on in the circuit, carbon dioxide, apart from what little may remain in the bag, it is at once eliminated Depth of respiration can be controlled with a nicety otherwise difficult to obtain, and by avoiding over distension of the bag it is easier to economise in gases

Thanks are due to Dr I Magill for permission to publish this note and to Dr E I Davis, who has given valuable help with certain details in design

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BRITISH MEDICAL ASSOCIATION

SECTION OF MEDICINE

AT a meeting of this section with Prof W W D THOMSON (Belfast), the president in the chair Prof J W MCNEE (Glasgow) spoke on

Cholecystitis

He said it was one of the commonest diseases of the gastro intestinal tract and might be found in men or women at almost any age The increase in sedentary occupation leading to biliary stasis and possibly focal sepsis were essential facts in an ætiology otherwise indefinite Treatment depended on whether infecting organisms were accessible to drugs in the bile or in the blood stream It was catarrhal cholecystitis that he wished to discuss Here the organisms were of low grade virulence and the symptoms were mild Continued flatulent dyspepsia was suggestive but diagnosis was often difficult Pain and tenderness in the right upper quadrant of the abdomen were important signs and radiology was chiefly helpful if stones were present In early cholecystitis duodenal intubation was the only completely reliable diagnostic method and was not sufficiently used in England Immediate examination of the centrifuged material for pus and organisms should be done and he himself relied very little on results of culture Differential diagnosis without the help of duodenal intubation was difficult as diseases of the stomach duodenum and appendix of the liver itself or even of the heart might be imitated by catarrhal cholecystitis

Prof. McNee believed that catarrhal cholecystitis could be cured by non-surgical means if treated early enough His method was to drain the gall bladder each morning with or without the use of the duodenal tube by a drachm of magnesium sulphate in an ounce of water before breakfast and to give olive oil before each meal This damped down acidity in the stomach and caused relaxation of the sphincter of Oddi As to diet he restricted only cooked fats and fried foods In these cases the liver was always somewhat deranged and spa treatment might help greatly

Sir ARTHUR HURST (London) found himself in almost complete agreement with Prof McNee. Gall bladder disease he said was very common the most likely path of infection was from the duodenum following some transitory achlorhydric gastritis such as gastric influenza or acute food poisoning when the duodenum might swarm with organisms He did not think infection arose via the lymphatics or the blood stream Catarrhal cholecystitis should always be borne in mind in cases of chronic dyspepsia it might also be associated with other conditions Pain was usually epigastric and repeated examination might reveal tenderness in the right hypochondrium It should be remembered that a radiologist might report a normal cholecystogram but could not report a normal gall bladder' Examination of the contents of the gall bladder was as essential as examination of the urine in diseases of the renal tract If the bile was normal microscopically and on culture then the gall bladder could be passed as normal Abnormal findings were excess of mucus definite groups of columnar cells, pus cells pigment granules, and crystals; the last two provided conclusive evidence of gall-stones Sir Arthur's practice was first to remove a specimen of duodenal contents then to wash out the duodenum and to give magnesium sulphate he then compared the cultures from the duodenal specimen with those from the gall bladder bile If the gall bladder bile grew the greater number of organisms definite infection was probable

There was in his view a definite and close association between abnormalities of the gall bladder and migraine Like Prof McNee he thought treatment should be by non-surgical drainage In severe cases the duodenal tube should be used for a few days He gave each morning just insufficient magnesium sulphate to cause diarrhœa and half an ounce of olive oil a quarter of an hour before each meal He believed in antiseptic treatment in biliary infections and gave 100 grains of hexamine three times daily after the urine had been made alkaline (and was kept so) After a six weeks' course sterile bile might be obtained if not the course could be repeated

Sir DAVID WILKIE (Edinburgh) said that except in acute cases cultures made from bile and the walls of the gall bladder following operation were mostly sterile but by special methods a slow indolent blood borne streptococcus had been found lodging in the submucosa in some cases He thought that only a drug working through the blood stream could help to clear up infection and had great hope that Prontosil might be useful

He believed surgery to be indicated when stones were associated with colic or digestive symptoms because of the dangers of acute obstruction and the possible development of malignancy In acute obstructive cholecystitis he recommended waiting 48 hours before undertaking operation If symptoms were subsiding cholecystectomy could be done in 2–3 weeks but if after 48 hours the temperature pulse rate and leucocytosis were all increasing drainage was essential It was also imperative to drain if the infecting organism was the *B welchii* in extreme old age and with a stone in the common bile-duct giving rise to ascending cholangitis Sir David spoke of the possibility that the gall bladder might be a focus of infection, especially in rheumatism The bacteriology of certain cases investigated showed a streptococcus to be a common infecting organism In fat patients with breathlessness and symptoms of indigestion great improvement would ensue with loss of weight and this was essential before operation was considered In some cases also great improvement in symptoms of unquestionably cardiac origin had followed removal of an infected gall bladder He had seen three cases in which nephritis had apparently cleared up after the same operation The prognosis in surgical cases was better after effective pre-operative treatment In 950 cholecystectomies his mortality had been 1 8 per cent In 100 cases of stone in the common bile-duct the mortality was 8 9 per cent, and all these cases had had jaundice

Dr T GARRATT HARDMAN (Dublin) said the Graham-Cole test gave valuable information on the power of the gall bladder to secrete and concentrate the dye and on the condition of the mucous membrane In most cases of dyspepsia complete examination of the gastro intestinal tract was necessary Stones containing more than 10 per cent of calcium would show on an ordinary film Papillomata might show as clear areas after the dye had been given and occasionally carcinoma of the gall bladder could be diagnosed In 512 consecutive cases he had made a correct diagnosis in 88 per cent of all cases and in 91 per cent of pathological cases He always used the oral method Radiological findings should not of course supplant ordinary clinical methods

Dr CHARLES MILLER (London) said that gall bladder pain might imitate the pain of angina pectoris, or again the same patient might suffer from attacks of pain from both gall bladder and heart He reported cases of undoubted attacks of angina with electrocardiograms showing an inverted T wave, whose attacks had cleared up, the electrocardiograms becoming normal, after removal of the gall-bladder and stones There was ground for thinking that lesions of the heart and gall bladder had some common symptoms as well as peculiar ones In a comparison of the morbid anatomy of the cardiovascular systems of patients between 40 and 70 years affected with gall bladder disease, and those whose gall bladders were normal, arterial degeneration was found much more frequently in the former group

Dr G Batten (Dulwich) asked what should be done for a patient, whose gall bladder had been removed for stones, when symptoms recurred

Dr B R Johnston (Westmorland) remarked on the frequent improvement in general health of the patient after cholecystectomy

Dr G E Nesbitt (South Africa) asked Prof McNee what kind of a tube he recommended for duodenal intubation and how the position of the tube could definitely be ascertained He thought that where gall bladder and cardiac conditions existed together there was probably a common cause for them

Dr H Cookson (Bournemouth) said that gall-stone colic was attended by less shock than was pain of cardiac origin, and disappeared more suddenly He thought that biliary colic might produce reflex constriction of the coronary vessels In 15 cases of chest pain associated with gall stones he had found no change in the electrocardiogram.

Dr L E Acomb (Newport) said in his own case removal of teeth started a flare up in gall bladder infection. Radiology was only of limited value

Dr N E Waterfield (Great Bookham) held that the pain in cholecystitis might be due partly to hepatic congestion He asked whether preparations like Agocholine or Cholelith were of any use

Dr J S McKelvey (Saintfield) thought the terms dyspepsia and cholecystitis almost synonymous, his experience was that young people ate far too rapidly He recommended magnesia and belladonna half an hour before each meal and magnesium sulphate each morning

Dr E R Cullinan (London) regarded the gall-bladder as a tank at the end of the liver, and the functions of both organs were still rather mysterious He emphasised the importance of the duodenal tube, intubation was not done often enough because of the supposed difficulty

Sir David Wilkie, in reply, said that prolonged drainage would help patients with recurrence of stone in the common bile duct following operation They should be drained for at least 14 days with a T tube into the duodenum In his experience cardiac patients had not been operated on for pain but for cardiac disability When a single stone was in the common bile duct jaundice was more common than when multiple small stones were present, which might act as a filter

Prof McNee said that he used a tube made by Mayer and Phelps with the end of a pyramidal shape Patients with gall-stones had really gone from the physicians hands by the time the stones had developed Repeated attacks of catarrhal cholecystitis would cause stones In cases of infection by the streptococcus he thought it impossible to reach the organism by disinfectants excreted in the bile, prontosil might be of use for this condition In the present state of our knowledge magnesium sulphate and olive oil were the most helpful drugs

SECTIONS OF PATHOLOGY AND RADIOLOGY

At a meeting of these sections Dr J C Rankin presided at a discussion on

Bone Tumours

when Dr R E Roberts (Liverpool) opened the subject from the radiological aspect He described the changes produced by the growth of a bone tumour as being visible radiologically as changes either of *structure* or of *contour*, and he submitted a detailed scheme for the examination of radiograms of bone designed for the interpretation of changes of density, translucency, and contour in terms of pathology He spoke also of the risks of attempting “spot diagnosis” A series of radiograms shown on the screen illustrated in detail the points to be observed in diagnosis The two causes of increased density were actual bony thickening and a raised calcium content While the former was attributable to a definite alteration in bone, such as the growth of an osteoma, the latter might be produced by pressure on the nutrient vessels, and the resulting ischæmia Widespread interference with vascularity occurred in metastatic growth secondary to prostatic carcinoma, and was followed by sclerosing carcinoma of the pelvis Increased translucency occurred when the bone was largely replaced by tumour tissue A rapidly growing parosseous sarcoma with a rich blood supply sometimes—though rarely—induced an intense hyperæmic decalcification in the neighbouring bone The outline of any clear area was a most important consideration If it was clearly defined it was unlikely to be due to a malignant tumour, in such a case Brodie’s abscess, cyst, fibrosis, chondroma, and osteoclastoma were to be considered Secondary deposits in the vertebræ were commonly shown by increased translucency associated with collapse of the vertebral bodies, but it was possible at an earlier stage to have the translucency without the collapse, the carcinomatous tissue acting as a support sufficient to preserve the contour One type of sarcoma was easy to confuse in the radiogram with chronic osteomyelitis, syphilitic or pyogenic If a surgeon operating on a supposed case of osteomyelitis found no pus the question of sarcoma should at once arise A positive Wassermann reaction did not, of course, preclude all possibility of sarcoma Treatment by deep X rays might produce endarteritis obliterans Dr Roberts showed the radiogram of a case in which under such treatment recalcification of the scapula occurred with reappearance of its bony outlines While the diagnosis of peripheral or eccentric chondroma was usually made easy by the evidence of remains of cortical bone around the cartilaginous tumour, a central chondroma might be impossible to differentiate from a cyst, or from a giant-cell tumour The latter tended to extend into processes of the bone, but not to break through the articular cartilage and it rarely perforated the cortex These three conditions—chondroma, cyst, and giant cell tumour—were often impossible to distinguish without biopsy The importance of examining many bones in such conditions as fibrocystic disease and multiple myelomatosis was well recognised The detection of the Bence Jones proteoses in the urine in myelomatosis, or of a high calcium level in the blood in hyperparathyroidism, might settle a diagnosis otherwise doubtful. Metastatic deposits might also give multiple lesions, but mistakes in such cases only arose when the radiogram was interpreted by someone unfamiliar with the patient’s previous history

Dr Roberts was doubtful about the identification of Ewing s sarcoma In cases he had seen the distinction from osteomyelitis or from congenital syphilis had proved difficult The typical appearance was of a "rubbing out" of part of the bony shadow as by india rubber The essential point in the diagnosis was that the tumour disappeared under a comparatively small dose of X rays. Metastases were also radiosensitive In true sarcoma it was necessary to make an attempt to reach a diagnosis before the appearance of the sun ray spicules typical of the X ray picture He was convinced that by the time these spicules had appeared metastases had formed and it was too late to operate Osteogenic sarcomata were usually single lesions and did not cause expansion of the bone the limits of the translucent area were irregular and ill-defined. They occurred typically at the lower end of the femur and at the upper ends of the humerus and tibia. The periosteal type of sarcoma caused changes in contour of the type which Dr Roberts termed subperiosteal bony proliferation The same change was found also in simple periostitis syphilitic periostitis various types of osteomyelitis and Ewing's tumour Repeated radiography was useful in clinching the diagnosis, but it was unwise to delay operation Expansion of bone suggested a simple tumour but when the bony shell gave way the question of *malignancy might* be difficult to decide. Biopsy was a problem for the surgeon and pathologist In simple tumours it carried no risk in the diagnosis of sarcoma he felt himself that the help gained was not always as great as had been hoped Biopsy was dangerous, but when all else failed the risk had to be taken

Prof J S YOUNG (Aberdeen) supported biopsy for its great value in early diagnosis of malignancy and for its safety as a surgical procedure Clinical diagnosis alone was often inadequate to save lives that might be lost through delay The surgeon had to depend on radiography and on biopsy If the *radiogram was convincing treatment* should *not* be further delayed That five year cures were possible was shown by the reports of the American Registry of Bone Sarcoma but the proportion of such cures did not exceed one case in seven Six cases out of seven were not treated till dissemination had started Serial radiography he regarded as risky just because it involved delay in operating while the use of the radiodiagnostic test (a test of the response to radiation) in *any surgically* accessible tumour always filled him with alarm He instanced a case of Ewing's tumour which while apparently disappearing in the X ray picture was steadily advancing in the neighbouring bone. When secondary growths appeared at any stage in a patient who had at any time been subjected to biopsy the biopsy was held responsible; secondary growths in a patient subjected to serial radiography or to the radiodiagnostic test were piously regarded as an act of God Prof. Young advanced the hypothesis that the hydrostatic pressure within a bone tumour was the main factor in determining its metastatic spread Anything which increased this pressure such as the normally occurring hæmorrhages increased the chance of metastasis. With the method of biopsy by puncture and suction of growth along the hollow wide-bore needle hæmorrhage in the substance of the tumour was bound to occur It was asserted to be safe but he regarded it as 100 per cent dangerous Incising the periosteum or the bone cortex freely and gently and excising a piece of the tumour in fact the old fashioned method which was regarded by some authorities with suspicion was the method employed in the Royal Victoria Hospital Belfast, and he regarded it as safe Animal experiments had shown that biopsy in the Flexner Jobling rat carcinoma had not increased the incidence of metastasis Seventy four 'five year cures' were reported in osteogenic sarcoma by the American Registry of Bone Sarcoma Twenty of these had had some *form of biopsy or previous* surgical interference Here again the danger of biopsy was not apparent His advice was that in every surgically accessible and radio-apparent bone lesion which *might conceivably* be a bone sarcoma decompression by open operation should be carried out as soon as possible and during this open operation a piece of tissue large enough to be regarded as a fair sample of the lesion should be excised for the purpose of microscopical diagnosis Open biopsy was not lethal and there was even a faint hope that decompression of the growth might minimise the risk of dissemination by lowering the hydrostatic pressure

A contribution from Mr HARRY PLATT (Manchester) was read by Mr H O CLARKE He said that diagnosis rested on a proper appreciation of the significance *of the* history of the case the physical signs X ray appearances and the results of biopsy The ultimate responsibility for the treatment adopted must rest on the clinician He agreed with almost every word *that Prof* Young had said, and he was delighted to hear such refreshing common sense talked on the subject of biopsy He believed that the dangers of biopsy were an absolute myth Exposure of the tumour allowed a naked eye view of it as well as the opportunity to excise a piece for section *In Manchester they* had *found value from the* Dudgeon smear and from rapid sections Their practice had been to close the torn capsule but since Prof Young's remarks he wondered whether even that precaution was advisable. Surgical removal was the best method of treatment In giant-cell tumours they curetted the tumour mass, or excised the *affected* bone *Amputation was reserved for very* advanced cases

Dr J F BRAILSFORD (Birmingham) said that although in many cases the radiographic features of malignancy in a tumour might not be characteristic, in those very cases the clinical features also tended to be equivocal He had found that the surgeon showed an anxiety to pass to the radiologist the responsibility for diagnosis and for the decision as to treatment He believed in the value of the radiodiagnostic test: it indicated whether or not the tumour was radiosensitive. Biopsy was dangerous Subjection of a growth to trauma accidental or surgical increased its rate *of growth as* did also incision of the bone He thought that the proportion of survivals reported by the American Registry of Bone Sarcoma was well within the limits of accurate histological diagnosis In the treatment of malignant bone tumours he regarded radiation as being only palliative

Prof J MATTHEW STEWART (Leeds) expressed his entire agreement with Prof Young's views in the *matter of the open* biopsy He protested against the insistence of some surgeons on an immediate frozen section in bone cases There was no comparison at all between the efficiency of the two methods—i e frozen sections and paraffin sections—in making a *diagnosis* in a difficult case and the element of rush and hurry in attempting a diagnosis with the patient under an anæsthetic were unsatisfactory His opinion on the subject of giant-cell tumours had changed. He *no longer* regarded the diagnosis of such a tumour as justifying a good prognosis in every case since recurrence and even in a small proportion of them toma the giant cells must be more or less universally distributed throughout the growth and in addition the matrix must arouse no serious suspicion of malignancy If this tissue was irregular or bizarre, with great cellular and nuclear heteromorphism or frequent mitoses, even if osteoclast like cells were present in abundance, only a very guarded prognosis was permissible If in such a case the osteoclast like giant cells were focally distributed and if there were areas showing spicules of new formed bone within the substance of the tumour, a grave prognosis must be given

Mr F C Pybus (Newcastle-on Tyne) gave an account of a strain of mice with a high incidence of bone sarcoma that had been bred from one original female mouse in which the occurrence of the bone sarcoma had been fortuitous

Mr Stanford Cade (London) gave his opinion that in the borderline case biopsy did not give a definite diagnosis The treatment of bone sarcomata was primarily non surgical The diagnosis should be by radiography and the tumour should be treated by the radiologist, who, if he did not cure the tumour, would at least have rendered it less virulent He did not believe that surgery even extended the time during which the patient was free from metastases Prophylactic radiation of the lungs he regarded as a bad procedure

Mr R C Elmslie (London) objected to two terms in Dr Roberts's scheme for the radiological diagnosis of bone tumours He thought it had been accepted that so called decalcification of bone was really withdrawal of bone substance and not of calcium from the bone that remained He wished the term osteitis fibrosa could be discarded, it was inaccurate, and at present it stood for at least four different lesions of bone He agreed with Prof Young about the importance of biopsy and with Prof Stewart about the danger of immediate diagnosis When there was a lump of bone which could not be explained the surgeon should do a biopsy, but he must send to the pathologist a good slice of the tumour chosen from the right part of it No pathologist should be expected to give an opinion on a slide prepared by another pathologist he required, and ought to have, a piece of the tumour

Dr Roberts, in reply, asked for a closer coöperation between the pathologist and radiologist in this matter of bone tumours

Prof Young agreed with Dr Brailsford that the growth of the tumour in its primary site was slowed down by internal pressure (the foot could not swell within the boot) It was *metastatic* spread that he suggested was increased by hydrostatic pressure

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SECTION OF ORTHOPÆDICS

Mr S T Irwin, president of this section, was in the chair when Mr Denis Browne (London) opened a discussion on the

Modern Treatment of Club-foot

He showed a series of photographs and cited arguments in favour of his theory of the mechanical cause of congenital deformities Mr Browne said that he regarded direct intra uterine pressure on the foot as the established cause of club foot, and saw in this conception a key to its treatment The pressure dimples on the dorsum of the deformed foot were, in his view caused by the uterine wall He showed how the feet were exposed to pressure in utero by certain abnormal positions of the legs Talipes of the hands did occur, but its infrequency was to be explained by the much more sheltered position occupied by the hands in the uterus In manipulating the club foot his principle was to get the foot into *full* calcaneo valgus position and to secure the full correction at the first manipulation It was impossible to over-correct, because in the normal new born baby's foot the little toe could be pushed with perfect ease against the outside of the leg In the after treatment the mother could easily carry out the necessary manipulation The splint he used was designed on the mechanical principle that it is possible to control the position of one foot by means of the other The foot was held corrected in relation to the body as a whole Pressure sores and skin irritation he regarded as unimportant and as no reason for discontinuing the splint, and he was not alarmed by a good deal of reactionary swelling after the first manipulation The cross bar of the splint was applied *after* both feet had been bandaged in position, the sole plate was applied first and then the leg piece By this means the foot was pulled into a valgus position When operation was necessary, he directed his attention to removal of bone, and left the soft parts untouched and unstretched By this means he hoped to prevent relapse of the deformity by elastic recoil of over stretched tissues

Mr E P Brockman (London) said that according to his hypothesis congenital club foot resulted from an intrinsic rather than an extrinsic cause He attributed it to a congenital dislocation of the head of the astragalus, which in turn was caused by an atresia of the socket into which the head fitted He used the splint advocated by Mr Denis Browne and found that it avoided nearly all the troubles he had encountered with repeated manipulation and strapping The splint substituted a persistent slow method of correction for the misplaced hurry of much modern orthopædic technique Of the two parts of the deformity, the equinus was the more difficult to overcome by manipulation alone By pushing against the splint the child seemed to push the heel down The criterion of cure was, as end result, "a foot with no adduction or inversion, the presence of a hollow upon the outer side of the foot in the position previously occupied by a bony mass, the head of the astragalus, the ability of the child voluntarily to evert and also dorsiflex the foot well above the right angle" Open correction of the deformity, by enlarging the socket and allowing the head of the astragalus to take up its normal relation, had not given very satisfactory results Feet that were good functionally were often ugly and many relapsed An arthrodesis was probably a much better operation There was no such complication as inward rotation of the tibia, but only imperfectly corrected deformity of the foot

Mr T P McMurray (Liverpool) said that he obtained excellent results by moulding the foot and applying plaster, provided that he got the cases really early Treatment should start on the first day of life and be continued till the foot could be held voluntarily in eversion

Mr R C Elmslie (London) said that one of the common mistakes in operating for the equinus deformity was to over stretch at the time of the tenotomy The older method was better, in which the foot was put up after tenotomy in the position of equinus and gradually corrected

Mr Eric Lloyd (London) said that Mr Denis Browne's splint had revolutionised the treatment of club foot, but it was a little difficult to use

Mr Harry Macauley (Dublin) said that he got good results with manipulation and strapping He thought that if the tendo Achillis was to be divided it was important to wait till the child could put the foot to the ground

Mr V J M Taylor (Nottingham) attributed almost all failures to a break in the continuity of the treatment for any cause The possibility of relapse had always to be considered

Mr H J. Seddon (London) was strongly opposed to tenotomy in his view the tendons must be preserved

The President asked whether there were cases which refused to yield to manipulation.

Mr Browne in reply said that he did occasionally meet intractable cases in which the feet were very stiff and the muscles much atrophied

Mr G Percival Mills (Birmingham) opened a discussion on the

Treatment of Tennis elbow

He said that though the onset of the pain was associated with the playing of golf or tennis or with amateur gardening there was rarely a history of definite injury A tender spot was found either over the radio humeral joint on the epicondyle or in the extensor group of muscles Pain was felt on grasping or gripping when the forearm was pronated there was moreover a slight limitation of extension with the forearm prone Mr Mills advised manipulation only when this limitation of movement was definite The tender point was usually over the radio humeral joint, less frequently over the epicondyle Under nitrous oxide anæsthesia he forced the elbow into full extension with the wrist and fingers flexed and the forearm pronated. A click might be felt as the elbow came straight, or adhesions might give way Sometimes extension came gradually with neither click nor the breaking of adhesions Two weeks rest of the elbow was advisable after manipulation. Of 33 cases so treated 22 were well within a fortnight Four others were eventually cured and 7 cases were more or less failures He had traced 5 cases in which manipulation had been advised by him but had not been carried out These cases showed no evidence of spontaneous cure Cases with muscular or epicondylar tenderness and no limitation of movement were in quite a different category Most of them were the result of over-strain and were best treated by prolonged rest. The commoner type of case which was curable by manipulation was in his opinion due to fraying of the thin edge of the coronary ligament and the nipping of a semi-detached portion between the bones On one occasion he had opened the radio humeral joint and had actually found the coronary ligament frayed out In the epicondylar type of case the effect of the manipulation might be to rupture tight bands which were painful when stretched

Mr K H Pridie (Bristol) said that tennis-elbow was an example of an injury in which muscle balance was upset it was best cured by manipulation of the neck.

Mr W E Tucker (London) said that there were three main types of tennis-elbow: (1) due to tearing of the extensor radialis brevis muscle at the external epicondyle (2) a bursitis which was most difficult to cure and (3) a fibrositis deep in the olecranon fossa. His experience was that manipulation was just as good without as with anæsthesia

Mr Elmslie said that he had contracted a tennis-elbow himself through manipulating club feet! He thought that the toxic element was far more important than was commonly recognised.

Mr D McVicker (Belfast) agreed that there was a toxic factor He manipulated the wrist elbow shoulder and neck for tennis elbow

Prof Hey Groves (Bristol) said he had found that injection of a 2 per cent solution of novocain gave relief from the pain On occasion he had cut down on the tendon and freed it from the bone

Mr F Crookes (Nottingham) advised complete rest for about two weeks in acute cases The chronic case was usually a local manifestation of generalised toxic fibrositis and, even when relieved was very prone to relapse

The President suggested that tennis-elbow was an example of a type of injury which always caused intense pain viz. tearing of a muscle from its bony origin with resulting periostitis

Mr Tucker read a paper on

Athletic Injuries to the Knee

excluding damaged cartilage He said that trauma to the knee-joint might be either direct or indirect One of the most important after effects was a wasting of the quadriceps associated with stiffness of the knee He advised four exercises for its correction: (1) voluntary contraction of the quadriceps with the limb lying at rest (2) raising and lowering the foot with the leg hanging over the end of the couch (3) raising the whole leg from the hip with the knee extended and (4) bicycling. Sponging and hot dressings were also useful and graduated contractions Injury to the internal lateral ligament was one of the commonest results of indirect violence It was caused by a lateral wrench and it was *not* commonly associated with a cartilage injury External rotation was painful but limitation of extension was a late symptom in untreated cases. Mild cases treated actively by heat, massage, and graduated contractions recovered in six days The moderate and severe cases were associated with an actual rupture of the ligament or with avulsion of a flake of bone Cases were treated in a plaster of Paris back splint with two circular bands applied over an internal pad of felt. They took 6 weeks to 6 months for recovery Anæsthesia was useful to rule out cartilage injuries and adhesions

External lateral ligament injuries were usually caused by direct violence and were often complicated by injuries to the biceps tendon or to the external expansion of the quadriceps They were treated by heat massage and neogalvanism The articular pads of fat might be injured either by direct violence or by hyperextension of the joint Pain was particularly noticed on going down stairs and the tenderness was felt on either side of the upper end of the patellar ligament Wasting of the quadriceps was early and obvious In synovitis with much fluid aspiration gave instantaneous relief of pain. The skin was incised with a tenotome and the needle entered through the lateral pouch. Weight-bearing was best avoided while pain persisted the time of recovery varied from a few days to several months. One type of synovitis to which middle-weight and heavy people were prone was associated with slight arthritic changes It was worth treating these patients thoroughly for they got relief from symptoms for several years. Quadriceps insufficiency was of three types. When the vastus internus was mainly involved the injury was often labelled a

(*Continued at foot of next page*)

REVIEWS AND NOTICES OF BOOKS

British Encyclopædia of Medical Practice

Vol IV By Various Authors Under the general editorship of Sir HUMPHRY ROLLESTON, Bart , G C V O , K C B , M D , D Sc , Emeritus Professor of Physic, Cambridge With the assistance of Prof F R FRASER, M D , F R C P , Prof G GREY TURNER, M S , F R C S , Prof JAMES YOUNG, D S O , M D , F R C S E , Sir LEONARD ROGERS K C S I , F R C P , F R C S , F R S , and F M R WALSHE, O B E , M D , D Sc , F R C P London Butterworth and Co 1937 Pp 650 35s

THE fourth volume of this work, containing 42 contributions, opens with an admirably succinct article on diarrhœa by Sir Arthur Hurst, and ends, appropriately enough, with one by W B Gabriel on endoscopy of the rectum N Hamilton Fairley writes on the tropical diarrhœas and ciliate dysentery, and there are two other articles on tropical medicine, one, by Ram Nath Chopra on epidemic dropsy and one by H Marrian Perry on bacillary dysentery Electrodiagnosis and the various conditions amenable to treatment by diathermy are discussed by E P Cumberbatch, and C B Heald contributes an article on electrotherapy In the neurological sphere, F M R Walshe and J G Greenfield collaborate in an article on the clinical and pathological aspects of disseminated sclerosis in which the former expresses profound scepticism as to the curative value of any existing method of treatment W G Wyllie writes on epidemic encephalitis and encephalomyelitis, and E A Blake Pritchard on electrical injury General and special surgical subjects considered are dislocations by G R Girdlestone, Dupuytren's contracture by E P Brockman, empyema by A Tudor Edwards, and dysphagia, dysphonia, and ear diseases by Lionel Colledge Diplopia by P G Doyne is the only subject of ophthalmological interest to be found in this volume, and there is only one article on pædiatrics, that by R W B Ellis on diarrhœa in infancy and childhood There are four dermatological articles on dysidrosis by J A Drake, on ecthyma by J E M Wigley, on eczema by Arthur Whitfield and on drug eruptions by R T Brain Several contributions are of gynæcological interest Eardley Holland writes on dysmenorrhœa and dyspareunia, James Young on endometritis and allied conditions, and M J Stewart and Andrew Claye collaborate to set forth the clinical and pathological aspects of endometriosis and adenomyoma A practical and thorough account of the methods of resuscitating the apparently drowned, by M B MacLeod, deserves mention The remaining articles on medical subjects will probably be of great use to general practitioners, most of whom will sooner or later, however unwillingly, be called upon to cope with a drug addict, and E W Adams here gives valuable guidance John D Comrie's article on diet in treatment may help him to answer the oft repeated question, "What can I eat, doctor?" Another valuable contribution is Helen Mackay's on dietetic deficiency diseases Sir Humphry Rolleston's short note on the care of the dying is a masterpiece of common sense Two aspects of dyspepsia are discussed by Robert Hutchison and Sir Arthur Hurst, Ronald Christie writes on dyspnœa and pulmonary emphysema, Sir Edmund Spriggs and O A Marxer on diverticulosis E H R Harries discusses diphtheria fully and clearly, including its prevention and treatment Dwarfism and infantilism and the encouraging possibilities of hormone therapy in these conditions are exhaustively surveyed by H Gardiner Hill Like its predecessors this fourth volume of the series is *profusely illustrated*

(Continued from previous page)

torn cartilage. Crureus and subcrureus insufficiency was confused with injuries to the pad of fat Insufficiency of the external vastus was often associated with a slack extensor fascia femoris Remedial exercises were an important part of the treatment Full manipulation should always be tried before the decision was made to remove a cartilage, but diagnostic movement under anæsthesia should be postponed for two to three weeks Even a case with an associated cartilage injury took no harm from treatment for six weeks as a sprained knee

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Rose and Carless' Manual of Surgery

Fifteenth edition By CECIL P G WAKELEY, D Sc , F R C S , F R S Edin , and JOHN B HUNTER, M Chir , F R C S London Baillière, Tindall and Cox 1937 Two vols Pp 1618 30s

THE format of this classic in its fifteenth edition departs in two ways from precedent the separation of the too bulky tome into two convenient volumes, and the decorations on the cover appropriate to a book published in coronation year New matter includes a good discussion of surgical shock and a chapter on the surgery of the sympathetic nervous system detailed enough for the requirements of a candidate for the F R C S The section on chest surgery, largely rewritten by Mr J B Hunter, is now well up to date, and that on brain surgery from the pen of Mr Wilfred Willway is a great improvement Corresponding revision is sorely needed in the sections dealing with the stomach and intestines, and with the male genital tract, for there are not only many gaps but actual mistakes which persist from previous editions The portion of the book most open to criticism, however, is that on pathology, the opening one, by Dr Carnegie Dickson Since pathology must anyhow be studied as a separate subject there is really no need for this section in a text book on surgery, but if any is included it ought to be better balanced , to introduce new bacteriological nomenclature, without correcting some of the old standing errors and ambiguities about exostoses, myelomata, and parotid tumours, to give only three examples, is to give a false impression of up to-dateness The inadequate account given of odontomes and of the newer conceptions of the sarcomata serve only to confuse the inexperienced reader It is indeed questionable whether this section should not be deleted altogether Its replacement by a single introductory chapter indicating that surgery is based on pathology, and that a knowledge of the fundamentals of bacteriology and morbid anatomy is essential before the principles underlying surgery can be grasped, would probably give the student a better perspective Similarly the section on gynæcological surgery is rather out of place, though the inclusion of chapters on the special departments—eyes and ears and throats—is an excellent way of reminding the student that their differentiation in hospital is merely one of convenience The anæsthetic section has been well revised and modernised A number of new illustrations have been added, of which the drawings are much better than the photographs

Abdominal Surgery of Children

Second edition. By Sir LANCELOT BARRINGTON WARD K.C V O Ch.M F R C S Edin F R C S Eng., Senior Surgeon Hospital for Sick Children Great Ormond-street London Humphrey Milford Oxford University Press 1937 Pp 333 25s

THIS bracing production exemplifies the orderly working of a mind which has been trained by constant contact with patients and clearly does not regard them only as so much clinical material The outcome of this attitude is a concise summary—without too rigid a discrimination between medicine and surgery—of the practical considerations which arise when abdominal disease attacks a child Statements of opinion on debatable issues are supported by ample evidence derived from the Hospital for Sick Children and from private sources The difference of 0 per cent between the operative mortality of congenital pyloric stenosis in private and in hospital practice emphasises the appalling danger of cross infection in open wards Many new items have been added in this edition including the most recent work on diaphragmatic hernia and such well tried but little used adjuncts to success as insulin for post-operative ketosis There are some omissions; for example nothing is said of the injection treatment of hydrocele of the tunica vaginalis—a method which has been found peculiarly successful in the infant More important is the deliberate omission of any account of the surgery of the urinary system this we cannot but regard as an artificial separation since retroperitoneal growths have been included and the surgery of the sympathetic nervous system in the abdomen has been at least partly discussed The phraseology is precise throughout

The broad outlook here shown will make an appeal to all interested in the diseases of children whether their bias is medical or surgical. Pædiatric surgery is a specialty which perhaps more than any other demands the intimate assistance of medical knowledge—the coöperation of the understanding surgeon with the specialist physician

Twins

A Study of Heredity and Environment By HORATIO H NEWMAN FRANK N FREEMAN and KARL J HOLZINGER. Chicago: University Press. 1937 Pp 300 18s

WE have elsewhere drawn attention to the remarkable monograph on twins by Profs Newman, Freeman and Holzinger which is unquestionably the fullest and most scientific study of the subject which has so far been published The authors give an adequate account of the previous literature on twins but the greater part of the volume consists of very thorough records and statistical analysis of their own observations The study mainly concerns psychological traits but many data are also provided on physical resemblances The non-statistical reader will find much of the work on correlation &c difficult reading but the case histories of nineteen pairs of twins separated in infancy and reared apart are of absorbing scientific and human interest The authors hardly exaggerate when they say that nearly every case would provide material for a good short story The biological considerations raised by the study of twins are of wide application and zoologists psychologists and sociologists as well as medical men will find this new study indispensable The tracing of so many separated twins and the difficulties of obtaining their confidence and coöperation when found must have called not only for exceptional diligence and enthusiasm but also for sympathy and human understanding of a high order The resulting monograph is a fine piece of natural history and one that would have rejoiced the heart of Francis Galton or Karl Pearson

The Citadel

By A J CRONIN London Victor Gollancz 1937 Pp 440 8s 6d

IT is probable that this book has been gravely misjudged by the public and that its author would be the first to deny that it is a picture of ordinary medical conduct in this country The remarkable success of Dr Cronin s previous novels suggests that his first concern is to tell an absorbing story and only incidentally to suggest lines on which medical practice might be reformed He shows skill as a story teller effectively shifting the scene from the squalid surgeries of Welsh mining villages to the dusty inactivity of a Government office and thence to a wicked world in which live successful practitioners of dubious standards If it is fair to look for didactic purpose in a novel we may find it epitomised in the hero s defence of himself before the General Medical Council In this speech Dr Manson told the tribunal that when he qualified he was a menace to society and that this ignorance on the part of the newly qualified practitioner of all but the rudiments of medicine should be remedied by the organisation of scientific units compulsory post-graduate classes and the bringing of science into the front line Dr Cronin pleads for the better payment of nurses and for placing the practitioner in a position of economic independence and he goes on to appeal for a more liberal attitude towards those who without medical qualifications are fostering supposed innovations in medical practice

He is certainly not alone among doctors in his desire for better medical education As a business man, however he must recognise that the problem of securing its improvement is largely an economic one The hero of The Citadel was driven from his medical school as soon as he qualified by his urgent need of money to pay back a loan and Dr Cronin gives us no hint of how to remedy the position of the poor student What he has not brought out is (1) the high proportion of medical students who qualify with the help of scholarships (2) the many indications—e g the foundation of the British Postgraduate Medical School, the subsidy offered by the Ministry of Health to insurance practitioners who want to keep themselves up to date the provision of studentships for the recently qualified by the Medical Research Council—that the standards achieved and maintained by doctors in this country are no longer a matter of official indifference

The general public is not specially interested in the mechanism of medical education The ordinary novel reader will seize with more avidity on the description of evil practices amongst unethical doctors in London. It is however from practitioners working in circumstances analogous to those of Dr Cronin s hero that we have heard pungent criticism of this section of his book No man in the position of Dr Manson, unless he were a rogue or a fool, would work with spurious consultants whose qualifications or lack of them he could easily ascertain From one who came to London as a stranger from a provincial school we learn that he did, to his amazement, receive a cheque from the first surgeon he called in after buying his practice The name of this surgeon had been given to him by the dispenser He returned the cheque ascertained from books of reference that the surgeon's credentials were not high, and troubled him no more This calm attitude in the face of an improper proposal represents that of the average practitioner There is no occasion to be smug about such abuses, we know they exist and that corruption in some form always will exist A safeguard open to the stranger in a great town is to seek advice from recognised teachers of medicine and of surgery or even in smaller places (so dependable are academic bonds) to provide himself in advance, through his former teachers, with recommendations When like Dr Manson, he abandons the guidance available to him before he has accumulated his own knowledge of personnel, the results for his patients may be deplorable, that the results for himself, as far as worldly success is concerned, may be less deplorable, is an incidental evil which Dr Cronin is not alone in regretting

Medical Emergencies

Second edition By CHARLES NEWMAN, M D Cantab, F R C P Lond, Physician and Medical Tutor, King's College Hospital, Assistant Physician, Belgrave Hospital for Children London J and A Churchill 1937 Pp 150 8*s* 6*d*

IN this excellent little book the author deliberately gives simple dogmatic directions without alternative advice In this edition the chapter on the treatment of poisoning has been modified and poisoning by war gases is now included Other new sections deal with coma in hot climates asthma, the treatment of hæmoptysis by artificial pneumothorax, and agranulocytosis Some good descriptions of practical methods are found in the text but a few clear illustrations would assist the reader A very useful chapter is the one dealing with "Sudden Insanity" The problem presented by the patient who suddenly becomes insane can cause the practitioner acute anxiety and very few books offer advice of real help to him

L'anaphylaxie expérimentale et humaine

By PASTEUR VALLERY RADOT, G MAURIC, et Mme HOLTZER Paris Masson et Cie 1937 Pp 130 Fr 36

THIS can hardly lay claim to being a general monograph on anaphylaxis Much of the book consists of an account of the authors' own experiments on anaphylaxis in the rabbit, particularly to "antigens" which play a part in human allergy such as extracts of horse dandruff, of the hair of domestic animals the feathers of birds, and so forth A second part of the book is devoted to human allergy The authors do not bring forward any striking new work, their purpose seems rather to traverse well beaten ground, but to illustrate it in the light of their own first hand observation The book has the familiar gallic qualities of clarity and grace and it succeeds in giving a fair idea of a difficult and complicated subject

Bacteriology A Text-book of Micro-organisms

Third edition. By FRED WILBUR TANNER, Professor of Bacteriology and Head of the Department, University of Illinois, Urbana New York John Wiley and Sons, London Chapman and Hall 1937 Pp 510 17*s* 6*d*

THIS is a book of a type more familiar in America than in British bacteriological literature—an attempt to present microbiology as a subject of general interest without overstressing any of its technical branches Such books make attractive reading, specially when they are written, as this is, by a skilled teacher who has a wide knowledge of the subject It is unfortunately difficult to make these books anything but superficial. The scope of microbiology is too vast and its technical applications are already too numerous to allow of a comprehensive treatment of the subject in an elementary work. Microbiology will, sooner or later, take a position among the subjects of basic education but much pedagogic skill and enterprise will be necessary before anything like an ideal presentation can be achieved. As it stands the subject is best approached through the avenues of one or other of its applied branches and such books as this serve a useful purpose in complementing knowledge so acquired and in generalising the student's bacteriological interests Bacteriology without its pathological applications is "Hamlet" without its hero, but it is difficult for anyone not medically trained to acquire sound notions on this aspect of the subject Even allowing for the limitations of space we do not think that the pathological side of the question is as well developed as the rest of the book. The paragraphs on the Dick test and scarlet fever are inadequate and ill orientated. Why, for example, should we be told that "*according to* Zingher" the Dick reaction appears more promptly than the Schick? It needs no ghost come from the grave to tell us this But though we can find plenty of minor faults we regard the book as offering profitable reading to anyone who wants to gain a general view of microbiology

Laboratory Outline in Filterable Viruses

By ROSCOE R HYDE, Professor of Immunology and Director of the Laboratories of Immunology and Filterable Viruses, Johns Hopkins University, New York London Macmillan and Co 1937 Pp 85 7*s* 6*d*

Johns Hopkins must be one of the few universities possessing a department devoted to the study of viruses and instruction in this branch of microbiology The director of this department, Prof Roscoe R Hyde, has written this little book as a guide to the laboratory studies of students attending his course of instruction in virus work It is in no respect a text book—even an elementary one—of practical virus study Deliberately Prof Hyde has omitted detail with the object of encouraging self reliance on the part of the worker, this is, in fact, a bare outline of the exercises to be carried out, and will thus be of little service to those beginners who are not adequately guided by someone thoroughly versed in virus work Whether or not the course outlined is an ideal one is open to question It seems to us somewhat unbalanced There is, for instance, a complete omission of the serological side of virus work, and this surely is an essential part in the training of the virus worker

THE LANCET

LONDON SATURDAY SEPTEMBER 4, 1937

EVOLUTION

THERE can have been no meeting of the British Association since 1860 at which evolution has not been in the minds and on the tongues of some of the members present. It is therefore seemly and appropriate that Sir EDWARD POULTON F R S, to whose scientific life natural selection has always been the guiding torch should devote his presidential address to a consideration of the history of evolutionary thought as he has seen it at successive meetings which he has habitually attended for more than 50 years Of any doubts about the fact of evolution he has heard but one whisper, about its causes and mechanism there is still no agreement His most impressive memory is an address by HUXLEY (THOMAS HENRY) in 1880 on the rise and progress of palæontology, in which that master expositor showed how the truths of comparative anatomy could enrich and develop the relatively meagre records of the rocks and make credible the ups and downs of the earth seen by the geologists Another matter which gave rise to much lively discussion was the physical possibility of the earth being as old as the biologists would like—solved in the end to the satisfaction of both parties by the discovery of radioactivity though without finding any exact figure for the age of a habitable earth The detailed cause of evolution which has been most constantly under discussion is lamarckism or use inheritance with the variety which SAMUEL BUTLER called unconscious memory DARWIN frankly accepted the possibility of its action though he thought it of far less importance than natural selection, and did not discuss it at length For some time it was supposed that WEISMANN had finally disposed of the notion but it has in recent years come back into some favour and with Prof E W MCBRIDE as its champion in this country, has been supported by experiments which are cogent though not perhaps conclusive Implacable darwinian as he is Sir EDWARD POULTON is not very sympathetic and he deals very shortly also with the idea to which several distinguished palæontologists have been driven that evolution is a process determined in any one of its lines from the beginning and with characteristics that an imperfect vocabulary can describe only as purposive a point of view which the Association heard of from H. F OSBORN himself He recalls the antagonism which at first was supposed to exist between darwinism and mendelism by those who forgot that DARWIN accepted the occurrence of large mutations but was disinclined to consider them in detail and who did not realise that very minute differences could be inherited along mendelian lines as well as considerable ones The whole forms a very interesting personal survey of the progress of knowledge and speculation about evolution Evolution itself and the elimination of the majority of young animals and plants are facts of experience, but it is still very uncertain whether the one will account for the other Perhaps the difficulty arises from searching for one cause of evolution rather than a number of mechanisms It is characteristic of animals that they generally have more than one means of reaching an end, reproduction for instance may take place in a variety of ways, and though a sexual process is predominant a variety of other methods may be used to achieve a new generation It is possible that darwinians lamarckians mendelians and orthogeneticists are all more or less right But Sir EDWARD POULTON does not think so

WORM PARASITES MADE SELF DISCLOSING

PERHAPS the most dramatic display of a helminthic parasite, brought about solely by its own movements, is the active passage of an adult loa across the eye under the conjunctiva This natural activity of parasitic worms is being more and more used to make them betray their unwelcome presence For example HALL and COLLINS[1] have used two methods to determine the presence of trichinæ in 300 human diaphragms in the first 1 g of muscle was squashed between thick glass plates and put under the microscope in the second the rest of the diaphragm averaging 113 g was digested in artificial gastric juice and put through a Baermann apparatus whose wire gauze filter had 80–100 meshes to the inch. The passage of larvæ through the screen is mainly the result of their own activity for if they fall on the wall of the funnel or on the wires of the screen they do not tend to stay there, as dead and motionless larvæ do, but slip on downwards to be collected in the funnel's stem The evidence suggests that this apparatus detects all infections in which there are living larvæ in the sample used and if that is a fair sample it distinguishes infective trichinous from healthy carcasses That there is great need for such a distinction the following considerations show Though these squash preparations missed all infections with less than one measle to the gramme (in this series 75 per cent of all who harboured living larvæ) it did show that digestion missed 66 per cent of those in which the larvæ were already dead while the combination of the two examinations made it manifest that of these 300 persons 41 had suffered from trichinosis The full implication of this will come with the realisation that the material itself was got from ten Washington hospitals whose patients came from army navy and civil life, from all over the United States, and were of every age colour and financial standing and that in no one of them did their medical history show a previous diagnosis of trichinosis The writers conclude that there must be several million persons in the

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[1] Hall M C. and Collins— [illegible] Wash 1937 52, 468.

United States, so that the incidence there in man must be greater than in garbage fed hogs, while its control constitutes the greatest trichinous problem in the world

In intestinal schistosomiasis there is, it seems, a like condition so far as the possibility of its disclosure by the activity of the larval worm goes ALLEN SCOTT[2] from 40,000 fæcal examinations made by his staff in Egypt, and from analysis of 2,000,000 others made at government treatment centres has found that 60 per cent of those living in the north and east of the Delta have intestinal bilharzial infection, almost all with *Schistosoma mansoni*, and he estimates that the projected extension of perennial irrigation will doom at least a million more Egyptians to this infection It is clear from a summary of the position by ROSE[3] that while treatments given mainly at government treatment centres have greatly lessened the *number of serious complications in urinary schistosomiasis*, they have not lessened the number of persons infected and reinfected The incidence of *S mansoni* does not run parallel with the local presence or absence of the intermediate host, a planorbis snail, there is some unknown factor here But what is certain is the efficacy (and tediousness) of the treatment courses, at present by antimonials, in the killing of schistosomes, and there is no doubt, could all the infected be induced to undergo and carry through treatment, that the results would be very different It is from this point of view that diagnosis becomes so important In a second paper SCOTT[4] has compared the values of techniques used for detecting eggs in the fæces in this infection by dilution or by concentration, and he finds that by neither could he display all infections even after counting eggs on three slides, each with 0 005 g of fæces diluted in decinormal caustic soda solution, supplemented by gravity precipitation of fæces suspended in this solution or in normal saline Further attempts have failed in his hands, and there seems little doubt that once more the power of the sieve to hold back eggs plays a part in the failure As to the value of egg counts as measures of worm loads, GUNAWARDANA[5] has compared the number of eggs found by this same technique in fæces taken from the rectum at autopsy with the number of hookworms got after scrupulous examination of the whole intestine His test covered 200 examinations made on unselected bodies at the General Hospital, Colombo, the worms were all necators and there was no correlation between egg counts and the number of worms Two examples make this clear, in one 158 female worms produced 78,900 eggs in 1 c cm of fæces, in the other the numbers were 1302 and 61,600 The evidence then goes on steadily accumulating that egg counts are no measure of worm-loads even when all eggs are passed directly into the bowel lumen, all to be voided in a day or two in the fæces It is then unreasonable to assume that the number of schistosome eggs which ulceration of the bowel wall happens to throw into its lumen on any particular day is any measure of that posited daily by a worm, still less of the number of worms which are positing them

The freeing of miracidia from the shell, and the use of their activity as a means of diagnosis, is dismissed by ALLEN SCOTT as not lending itself to routine examination For intestinal infection by *Schistosoma japonicum* at least, this is not the view of ROSE With introductions from the Health Section of the League of Nations he spent over a month in Egypt seeing all he wished to see and helped with courtesy to his aim which was to ascertain the bearing of the work in Egypt on the problem in China He sums up the matter now under consideration by the statement that it is established in China that when microscopic examination has become negative and cure would have been *held to have taken place by the Egyptian standard*, it has been possible to hatch miracidia from larger quantities of stool, and that before cure is accepted *there must be absence of miracidial hatching in three consecutive stool examinations* It seems reasonable to hope that there may be found the means to induce living miracidia to disclose themselves on a mass scale for the widespread diagnosis of intestinal infection caused by any of the schistosomes in any country

SOCIAL INCIDENCE OF CANCER

THE major difference between cancer and many another disease, say tuberculosis, is our relative lack of knowledge of the factors intimately associated with it Our recognition of the infectivity of tuberculosis is one clue to its prevention, its close associations with occupation, social status, and the standard of living are others But it is also well known that the death rate from cancer of certain sites rises steadily and considerably as we pass down the social scale Clearly a determination of the reasons for this change in incidence might do much to direct us to means of prevention In each case of cancer two obvious but fundamental questions arise why has it occurred in a particular organ, why has it occurred in a particular person? In a valuable study recently published by E L KENNAWAY and N M KENNAWAY[1] an attempt is made to see how far we can at present answer those questions Since probably most cases of cancer are due to several factors they propose a rough classification of five—namely, intrinsic and extrinsic factors, a localising factor, and genetic and extra chromosomal heritable factors Of intrinsic factors we know exceedingly little As localising factors to carcinogenic agents several different types of processes in the body are already recognised, more, no doubt, have yet to be identified In some forms of cancer in man there appears to be a heritable or familial character, the claim that an extra chromosomal heritable factor has been demonstrated in mice has recently been invalidated[2]

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[2] Scott J A *Amer J Hyg* 1937 25 566
[3] Rose G Chinese Medical Association Spec Rep Ser No 2 Shanghai 1937
[4] Scott J A *Amer J Hyg* 1937 25 540
[5] Gunawardana S A. *Ceylon J Sci* (D) 1937 4, 1[illegible]3

[1] *Acta un int Cancrum* 1937 2, 101
[2] See *Lancet*, August 21st, 1937, p 455

As regards prevention, however, the external factors must still be given pride of place. The most important instance of their effect is provided by the social distribution of cancer already referred to. The analysis made by the late Dr T. H. C. Stevenson of the death records of the General Register Office of England and Wales for the years 1921–23[3] showed an abrupt contrast in the social incidence of cancer above and below the pylorus. Cancer of the lip, tongue, tonsil, stomach, larynx and skin shows an increasing frequency as one passes down the social scale. Cancer of other organs, e.g. of the intestine and rectum, and cancer at deep-seated sites reveals little change. It is this contrast between the accessible and inaccessible sites that led Stevenson to conclude that a large proportion of cancer mortality would be prevented if the conditions of life of all sections of society were assimilated to those of its upper ranks. As the Kennaways point out the stomach and the parts of the alimentary tract above it are most directly affected by factors of external origin—food, drink, tobacco, oral hygiene. They quote the Registrar-General's figures and others from a more recent study of their own[4] to show the high incidence of cancer of the upper alimentary tract upon males occupied with the supply of alcohol. One external factor of importance is suggested by these observations. Possibly the low incidence of cancer of the uterus in Jewish women, demonstrated by several workers, may depend upon similar external influences, for example the ritual washings and periods of abstention from intercourse prescribed by Jewish law or, as Sampson Handley has suggested, a lessened exposure to bacteria and their products resulting from the circumcision of the male. With regard to this latter possibility data for a Moslem people would be of much value, for among them circumcision prevails without the Jewish hygienic ritual. The Kennaways can find no satisfactory statistical evidence of this kind but they quote as suggestive hospital data from India collected by Nath and Grewal.[5] Of Hindu female patients with cancer 1 in 2 had carcinoma of the genital tract while for Moslem women the figure was 1 in 3. Similar racial observations are concordant in showing that cancer of the penis is absent in those circumcised in infancy but may occur if the operation is postponed even for a few years. It seems that this form of cancer is dependent upon a single known factor, the presence of a prepuce. Whether the mode of action is by the development of a carcinogenic substance in the retained secretions or by fixation of some other agent, perhaps by irritation, one cannot say. The train of events leading to this malignant growth apparently starts in the early years of life and removal of the cause does not avert its final appearance in old or middle age. Similarly cancer of other sites may be predestined to occur through factors to which the body is exposed many years earlier. The Kennaways point out that this idea suggests interesting possibilities of the prophylaxis of cancer by attention to the hygiene of youth. Cancer of the scrotum also appears to be a form wholly dependent upon external factors. Amongst the 1486 fatal cases occurring in England and Wales in the twenty-five years 1911–35 none related to a member of the professional classes and none was reported from a non-industrial county. Comparing the age distribution of a form of cancer with a known agent, for example mule-spinners' cancer, with the distribution of the ordinary forms of cancer with unknown agents, the Kennaways find a correspondence compatible with the view that these different forms are caused by similar processes of exposure to similar agents.

In addition to much other material they bring together data on the relation between the total incidence and the incubation period of cancer. A much more intensive stimulus is required, they find, to shorten the latter than is necessary to increase the former. The incubation period seems to be especially under the influence of genetic factors. For example the average age at death from cancer of the scrotum is almost the same in chimney-sweeps as it is in the general population, although the special liability among sweeps to this form is enormously greater than it is in most other occupations. Even the extremely high incidence of cancer of the lung among the miners of Schneeberg and Joachimstal is not associated with death at a very early age. On the other hand some forms of cancer in which a genetic factor is concerned, for example cancer of the colon and rectum in families showing polyposis intestini, lead to death at an age which is on the average much earlier than that seen in subjects of similar forms of cancer in the general population. In total the Kennaways have brought together and discussed very clearly a great deal of valuable information. On the most cogent point—the social distribution of the disease—it will be intensely interesting to see how far the differential incidence is affected by the improvement in cleanliness and the levelling of other social conditions which has taken place since 1921. For the necessary statistics we must continue to wait patiently for the Registrar-General's analysis of the occupational mortality experienced in the years 1930–32, the results of which should soon be available. It is possible that these more recent figures may give some clue to the origin of the social incidence of cancer.

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[3] Registrar-General's Decennial Supplement: Occupational Mortality 19 7.

[4] *J Hyg Camb* 1936 36 236.

[5] Nath V and Grewal K S *Indian J med Res* 1935–36 23 140.

Advertisement of Local Health Services.—The Minister of Health, Sir Kingsley Wood, has arranged with the coöperation of the Postmaster-General to provide information in post offices about the public health services available in the locality. Every post office will display a notice stating that particulars can be obtained at the counter about the health services in the district, including the addresses of the antenatal clinics and child welfare centres, municipal or voluntary, and the times at which they are open. Information will also be given about such matters as the way to get an ambulance, the addresses of the medical officer of health and the vaccination officer, and the out-patient hours of the local hospitals. Information about medical benefit under the National Health Insurance scheme will continue to be available

ANNOTATIONS

THE ASSIMILATION OF IRON

DURING recent years much has been done to establish on a satisfactory basis the treatment of iron-deficiency anæmia in the adult. Ferrous salts are put up in convenient form; the appropriate dosage of different salts is easily ascertained and the large doses required if ferric salts are used is now generally realised. The position with infants and young children, however, is different. Since capsules and pills are unsuitable, and solutions of ferrous salts are usually unstable, ferric salts are chiefly used, often in quite inadequate dosage. Though large doses of iron and ammonium citrate are well tolerated by babies if, say, a week is taken to work up to the required dose, the sudden administration of a full dose often produces colic and sometimes diarrhœa, which naturally enough upsets the parent as well as the child. On another page Dr. Helen Mackay supplies evidence that the addition of dilute hypophosphorous acid increases the stability of a solution of a ferrous salt. The mixture remains stable at room temperature for well over a month and has proved satisfactory for the treatment of anæmia in babies. The supply of ferrous salts in stable solution, effective in comparatively small amounts, should do much to promote adequate treatment of anæmia in babies. Under the name of Ferro 66, the Fabrik Promonto have issued for trial a solution containing 50 mg. of ferrous iron per c.cm., say 2·5 mg. per drop, and Glanzmann[1] in Switzerland and Stolleis[2] in Germany have been testing it. Ferro 66 is ferrous chloride dissolved in a solution of ascorbic acid which protects the ferrous salt from oxidation, so that the solution can be kept for about 3 months. Stolleis treated 25 patients of ages 2 months to 7 years. They were all diagnosed as cases of iron deficiency and included "post infection" anæmias and a case of von Jaksch's anæmia. The dose given to infants was 0·5 to 1 c.cm. of the drug (25 to 50 mg. of iron) daily, and 0·5 c.cm. was found as effective as double the amount. It was given in fluids such as milk and tea, because the concentrated solution stained the teeth. The three youngest babies were gradually worked up to the full dose. The drug was well tolerated by the 6 out-patients treated. Among the 19 in-patients, who because of their intercurrent illnesses often had digestive disturbances, administration of the drug had to be stopped or interrupted in 3 who had loose stools or vomiting. Stolleis records in some cases a reticulocyte response, with a sharp rise of red cells in only 8 to 14 days "to normal or above," and a gradual rise of hæmoglobin to normal. The period of treatment was generally two to four weeks; in 2 cases eight weeks, and in 2 others with intercurrent infections four months. These results seem remarkably rapid, but details are available of only a few cases. Glanzmann's four published cases include examples of anæmia due to iron deficiency alone, of acholuric jaundice, and of anæmia in cœliac disease, which last he treated with liver and Ferro 66 with excellent results. He gives no details of any series of cases of uncomplicated iron deficiency. He suggests that vitamin C plays a similar rôle in iron assimilation to that played by vitamin D in phosphorus and calcium metabolism, and, if the results obtainable with Ferro 66 prove superior to those obtained with other ferrous salts, the question will arise whether the ascorbic acid has some function other than that of protecting the ferrous iron from oxidation. It is to be hoped that Ferro 66 will soon be available for trial in this country.

TWINS

IDENTICAL twins, individuals derived from a single ovum and carrying, it may be supposed, the same determinants of heredity, have long attracted the attention of psychologists. Francis Galton in his "Inquiries into Human Faculty" published in 1883 was the first to make a scientific study of the mentality of identical twins, realising that the outcome might well prove critical to his infant science of eugenics. We have had to wait, however, for a really comprehensive scientific investigation of the mental and other peculiarities of twins; the discussions of the subject in standard works on psychology are mostly trivial and quite inadequate. Up to about 1930 contributions to the study of twins were infrequent and relatively unimportant, though Thorndike, Merriman, Lauterbach, Wingfield, and Hirsch each added something to our knowledge. During the last half dozen years there has been considerable progress, above all that represented by the painstaking work of Prof. Horatio Newman of Chicago. Himself a zöologist, Prof. Newman has collaborated with colleagues, F. N. Freeman and K. J. Holzinger, who hold chairs respectively in psychology and statistics to produce a summary of what is known of the peculiarities of twins, and their study[1] includes a full record and analysis of their own extensive work. The claim that this is "the first thorough study" in the field may be allowed without reservation. The centrepiece of the book is a study of 19 pairs of identical twins who were separated in infancy and reared apart. The special value of such material for the study of the relative importance of heredity and environment in the determination of human personality and behaviour is so obvious that it is astonishing that no such study of a series of separately nurtured identical twins had previously been undertaken. The authors themselves admit that they have failed to find any simple solution for the nature-nurture problem, but the wealth of interesting and carefully analysed material makes a real storehouse for all future workers. As might have been expected the analyses showed that identical twins were much more alike than fraternal twins in most of the traits measured. This was true of physical dimensions, intelligence tests, and educational achievement. On the other hand, the divergency between twins in "personality" was sometimes considerable. Galton's view was confirmed that handwriting is a highly individual character, and this is evident even to the inexpert who examines the many examples of the writing of twins given in the book. Only two of the nineteen pairs of twins reared apart had handwriting that was difficult to distinguish.

A puzzling feature in twins is the reversed symmetry commonly shown by such characters as "handedness," the palmar skin pattern, and the arrangement of hair or teeth. For example among 241 pairs of identical twins both were right handed in 166 instances (68·9 per cent.) and there was one right-handed and one left-handed in 58 instances (24·1 per cent.). This reversal might be plausibly explained by the view that one twin had been derived from a partially differentiated right and the other from a partially differentiated left embryo but this does not explain the high reversal findings among fraternal twins Among 274 pairs of fraternal twins 220 pairs (83 6 per cent) were right handed and 41 (15 per cent) had one right-handed and one left handed member No satisfactory theory for this relatively high percentage of reversals in fraternal twins is forthcoming

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[1] Glanzmann, E.: *Schweiz. med. Wschr.* 1937, 67, 436.

[2] Stolleis, D.: *Dtsch. med. Wschr.* 1937, 63, 819.

[1] Twins: A Study of Heredity and Environment. By Horatio H. Newman, Frank N. Freeman, and Karl J. Holzinger. Chicago: The University of Chicago Press. 1937. Pp. 369. 18s.

The otherwise proud possessors of twins are sometimes haunted by the thought that their offspring may have to split between them a single quantum of intelligence This study is entirely reassuring on the point Twins were found to be normal in intelligence and educational acquirements they were neither superior nor inferior to people in general If a general conclusion can be drawn from this monograph it is that there exist forms of behaviour which are determined largely by heredity but that all of these are susceptible to environmental influence As H S Jennings has broadly put it, What heredity can do environment can do also

ADIE'S SYNDROME

In 1932 Adie published in *Brain* a communication on a benign disorder sui generis, in which tonic pupils and absent tendon reflexes presented a clinical picture which he distinguished from that of tabes and the Argyll Robertson pupil. Though he was careful to give Nonne and others due credit for their work in the same field his communication was so complete and well documented that the condition he described has since been known as Adie's syndrome His belief that it is far from rare has been confirmed in various quarters In 1936 Müller collected more than 100 cases and now G Bergmark[1] of Upsala has just published 16 cases of his own Adie's syndrome should in his view be regarded rather as a curious cosmetic blemish than as a serious disorder requiring or responsive to treatment To overlook it matters little What matters much more is to misinterpret it as a manifestation of late syphilis requiring specific treatment with the object of averting or curing tabes The abnormalities of the pupils are the salient features of this syndrome On one side seldom on both sides, the reaction of the pupil to light is absent or defective on accommodation to near vision there is a myotonic reaction characterised by a comparatively slow contraction of the pupil which in some cases makes up for this slowness by contracting more completely than its fellow When the effort to accommodate to near vision is relaxed the pupil on the affected side dilates more slowly than its fellow but ultimately the affected pupil may become much the wider of the two Included in the syndrome is the absence of one or more tendon or periosteal reflexes. There are no motor or sensory disturbances no other demonstrable abnormality of the nervous system and nothing amiss with the cerebro-spinal fluid whose reaction to the Wassermann test is negative as is also that of the blood The syndrome is often discovered by accident, and this was the case with as many as 7 of Bergmark's 16 cases Only 5 of his patients were males and in Müller's collection there were approximately twice as many women as men In the rare cases in which the ocular condition is bilateral, the abnormalities are usually more pronounced on one side than on the other This condition may begin in early childhood and its development seems to come to an early stop the patient's condition remaining unchanged over a period of many years Discussing the ætiology Bergmark dismisses syphilis as a negligible factor even in the cases with a history of it unassociated with a positive Wassermann reaction He is also sceptical as to the part played by epidemic encephalitis in none of his cases was there any evidence of parkinsonism But there was one definite as well as one probable case of epidemic poliomyelitis in his series In a condition whose ætiology is unknown and whose treatment futile the most important consideration to be borne in mind is that the syndrome is a common complaint whose confusion with syphilis of the central nervous system may do the patient serious harm in more ways than one

SAFE CATGUT

The Therapeutic Substances (Amendment) Regulations 1937 just issued by the Ministry of Health with an accompanying circular (No 1641) will be of interest to all medical men engaged in surgical work whether surgical specialists or general practitioners Last September we drew attention to the circular (No 1563) issued by the Ministry of Health to local authorities asking them to make sure that the catgut used in the hospitals for which they are responsible did not carry any risk of conveying infection. This circular accompanied a memorandum (199 Med) on sterilised surgical catgut on the lines of the paper read by Sir Weldon Dalrymple-Champneys to the Royal Society of Medicine eighteen months ago[1] in which the nature and methods of manufacture and sterilisation of surgical catgut were described and reference was made to 9 recent cases of post-operative tetanus (5 of which proved fatal) in which the evidence pointed very strongly to 'home-cured catgut as the source of infection. The new regulations carry the matter a step further by requiring that every container of and wrapper enclosing surgical ligature or suture other than a ligature or suture offered or intended to be offered for sale as sterile shall bear a label on which are printed or written in a conspicuous manner in indelible red ink the words non sterile surgical ligature (suture)—not to be used for operations upon the human body unless efficiently sterilised. A hospital or practitioner will still be at liberty to use any method of sterilising catgut for their own use which they may think fit (the Therapeutic Substances Act and Regulations only govern ing surgical catgut offered or intended to be offered for sale) but they will now be warned by the label on raw or partially sterilised" catgut that such material requires efficient sterilisation before use. The Ministry hopes in this way to remove the false sense of security which they have reason to believe has sometimes been given by the descriptions partially sterilised or internally sterile, and may have led to such disasters as were referred to in their previous memorandum. We understand, by the way that as a result of Sir Weldon's paper to which we have already referred and Memorandum 199 Med., a number of hospitals which sterilised their own surgical catgut have gone very carefully into the methods used and have either abandoned sterilisation in favour of the purchase of catgut made under the Ministry's licence or have modified their procedure so as to ensure its safety

The efficient sterilisation of surgical catgut has also been exercising the minds of the American Medical Association which recently instituted an investigation into the sterility of catgut sutures on the American market The results of this investigation, which was carried out by Dr J H Brewer of Johns Hopkins University, were published in February of this year [1] In this investigation 1020 sutures were examined by the method of Meleney and Chatfield [2] with modifications suggested by R O Clock or introduced by Dr Brewer and his co workers, and 30 of these sutures (i e , 3 0 per cent) were found to be non sterile These non sterile sutures were derived from 6 of the 14 firms represented—i e , 43 per cent of the firms whose products were tested were responsible for a non sterile product When, however, only sutures of recent manufacture were considered the proportion of firms placing non sterile products on the market dropped from 43 to 12 5, and Dr Brewer attributes this improvement largely to the influence exerted by the publications of Meleney and Chatfield and of Clock.

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[1] Nord. med Tidskr July 24th 1937 p 1109

[1] *Proc R Soc. Med.* 1936, 29 35

It will be remembered that in the Ministry of Health's memorandum Clock's conclusion that "heat sterilisation properly controlled is the only safe and *positive method for sterilising surgical catgut sutures*" is characterised as "an extreme view," and as surgical catgut sterilised by other methods is still licensed by the Ministry under the Therapeutic Substances Act it is obvious that their attitude in this respect is unchanged The American investigations just described *do not in fact* provide evidence of the justice of Clock's contention, for only one of the firms whose products were tested used other than heat methods (firm No 9), the method in this case being described as "heat or chemical"

INDIA'S QUININE PROBLEM

SOME ten years ago Sir Henry Gidney, speaking in the Indian Legislative Assembly, said that if all the dead bodies of malaria patients were placed side by side they would extend from the north to the south of India Translated into less ghoulish expression, the annual mortality in India from this disease averages two millions, a staggering figure even in a population of over three hundred million people, 30 per cent of whom suffer from the disease At a meeting of the Central Advisory Health Board held last June, over which the Viceroy presided, Sir Henry blamed the authorities for their neglect to tackle this problem "We pay too much attention," he said, "to the wealth of India and too little to its health" In his view the death roll from malaria could be greatly diminished if a wise quinine policy were adopted and strictly administered Up till now no antimalarial drug had been found which was so effective, and at the same time so inexpensive, as quinine For the purpose of mass treatment he estimated the amount of quinine required at 9½ million ounces a year whereas the actual annual consumption was less than 3¼ millions Two thirds of the malaria stricken people of India go without quinine If the Government of India were itself to manufacture all the quinine required by the population and to control the profit on its sale, this enforced abstinence would cease At present less than one third of India's annual consumption of quinine is produced in Government factories in Bengal and Madras and the balance is imported from abroad chiefly under a contract with Java According to the Bengal Government report for 1935–36 the manufacturing cost per pound is Rs 6 5 the present Government selling price being about Rs 18 per lb 'This profit" Sir Henry remarks "is being secured at the expense of thousands of malaria dead" Taking the cost per ounce at the Bengal factories as 6½*d* the Government sells it at 1*s* 8¼*d* and the convention of makers at 2*s* 2*d* in bulk lots The difficulty is that India, like the rest of the world, will have to continue willy nilly for some years to come to pay tribute to Java for its supplies of cinchona bark and quinine In Formosa immense areas of cinchona trees have been put under cultivation, and in a few years' time Japan will be able to meet all her own domestic requirements In India before large scale and economic production can be begun it will be necessary to choose the species of cinchona yielding the highest percentage of quinine and to select the best soil for cultivation It may be ten years before India, even if she starts to work at once, can hope to produce all the quinine her population needs, but in the meantime it should be possible to overhaul existing contracts It is a health rather than a fiscal problem

DANGEROUS INFECTIONS OF THE FACE

RAPID intracranial spread of infection with fatal septicæmia is a danger which we have learned to associate with apparently minor inflammatory lesions of the lips and nose Yet, as Urban Maes points out,[1] few surgeons in the practice of a life time see enough cases to arrive at conclusions based on their own experience The progress of an individual case may be so disastrous that it makes a deep impression, and whether the patient dies or recovers, the surgeon is apt to formulate rules for treatment based on what was done or left undone in that case Maes reviews the literature on the subject of infections of the "dangerous area" of the face, starting with Ludlow's original description in 1852 of "a local mischief upon which constitutional symptoms may supervene" He follows this with a summary of the clinical histories of 20 fatal cases and of 4 cases with recovery occurring in the last nine years in the practice of two hospitals in New Orleans He reaches two definite conclusions (1) in a very large proportion of fatal cases trauma, whether introduced by the patients' meddling fingers or by the efforts of the surgeon, is a contributing factor, and (2) local rest of the affected part, and absence of surgical interference with the lesion, give the best hope of recovery

The "dangerous area" of the face is the triangle which extends roughly from the angles of the mouth to the bridge of the nose The skin of the face is thin, and in this area it has underlying it a rich plexus of veins embedded in an unusually small amount of cellular tissue and in an unusually large amount of connective tissue The fibres of the muscles of expression are superficial, and around the lips they are attached to the skin, making any degree of immobility difficult to insure When the lesion is squeezed or scratched by the patient, or is probed or incised by the surgeon, one of the small veins is almost certain to be injured The angular vein, which is the upward continuation of the facial vein, communicates directly with the veins of the lip and with the ophthalmic veins , they in their turn open into the cavernous sinus, and the facial vein has no valves Thus this region of the face which is particularly exposed and susceptible to trauma is also anatomically designed to allow ready passage of infection to vital parts

The infecting organism is usually the *Staphylococcus aureus*, and a positive blood culture can generally be obtained. The mischief starts typically as an unimportant lesion such as a furuncle in a young vigorous adult and the illness has a brief course. The initial mild discomfort is followed by increasingly severe pain, with red or purple discoloration of the part and œdema and induration of the tissues. Shivering and hyperpyrexia follow as the infection spreads around the orbit and on to the forehead. Exophthalmus may be present as alarming evidence of cavernous sinus involvement. Death is usually by coma and post-mortem examination will show thrombophlebitis, thrombosis of the cavernous sinus, meningitis, and metastatic abscesses. When patients recover after incision of the primary lesion Maes believes with others[1] that it is in spite of, rather than by virtue of, the treatment, and very pertinent is his observation that he has never seen a fatal case in which some form of trauma was not a factor. Rest in bed is advised for all but the mildest cases and local treatment restricted to the simplest measures. Talking and laughing are forbidden and the movements of the mouth even in taking nourishment are restricted. Strapping has probably some effect in immobilising the facial muscles. Maes favours spirit compresses. The suggestion of tying the angular vein at the side of the nose is logical enough, but this is impracticable in all early cases and once the infection has reached the veins it will probably be too late. An occasional success in saving life has followed drainage of the cavernous sinus, with or without removal of the eye, but once general spread has started we are dealing with a desperate condition and treatment is of little avail. The potential danger of all septic lesions around the lips and nose must be accepted from the outset and not only patients but their doctors must be made to realise that squeezing, probing, and cutting seriously increase that danger.

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[1] *J Amer med Ass* 1937 **108** 722

[2] *Surg Gynec Obstet* 1931 **52** 430 *Ibid* 1933 **56** 149

[1] *Ann Surg* July, 1937 p 1

FINANCIAL ASSISTANCE FOR COLONIAL HEALTH SCHEMES

THE organisation of the treatment of venereal diseases in Jamaica, the construction of a tuberculosis sanatorium in Cyprus, where this disease is widespread, and the extension of the medical services of Northern Rhodesia are among the schemes to be supported this year by grants from the Colonial Development Fund. The purpose of this fund is to assist by free grants or loans at low rates of interest developments recommended by Colonial Governments for the improvement of amenities in their territories. Since its inception in 1929 nearly 4½ million pounds have been issued for these purposes, mostly spent in the encouragement of local industries. As regards public health, the fund is intended to support not purely curative work, but only schemes designed to attack conditions leading to the spread of disease and to improve the general health of the community. In the current year the advisory committee of the fund has recommended[2] free grants of £19 000 per annum for five years towards the cost of an attempt to control sleeping sickness in Nigeria, where this disease is assuming alarming proportions owing to increasing migration to small rural villages and greater facilities for trade and travel. Mass surveys are to be carried out, and the treatment of 100 000 patients per annum is planned. An effort will be made by an extensive system of clearing and re-settlement in tsetse-free areas to prevent reinfection. Grants are also to be made for the continuation of Dr J. F. Corson's study of this disease in Tanganyika; he is investigating the relation of human trypanosomiasis to the disease in domestic animals in a wild state and the part which may be played by such animals as reservoirs of infection. In Sierra Leone help is to be given towards the cost of constructing a maternity hospital and infant welfare centre at Freetown and the training of native midwives and health workers to work in the Protectorate. At present midwifery is in the hands of untrained native midwives and, in spite of a high infant mortality rate, infant welfare work is confined to that which can be provided by overworked medical officers and the staffs of one or two mission hospitals.

A FRIEND IN DAVOS

THE death on August 18th of Mr W. G. Lockett, British Consul for the Grisons, removes a figure familiar to British residents in Switzerland for the last thirty years. Lockett had made some mark as a journalist before he was invalided to Davos at a time when John Addington Symonds was still living at AmHof and Robert Louis Stevenson was playing at tin soldiers with his stepson in the attic of AmStein. He soon started an English edition of the *Davoser Blatter* which was known as the *Davos Courier* and circulated in the English colony and among ex-patients after their return home, and collaborated with that brilliant caricaturist Urquhart in a series of pamphlets and magazine articles featuring the development of alpine sport with the gradual decline of skating and bob-sleighing and the dawn of the new era of ski-running. All this time Lockett was available for help or advice on the problems of residence abroad and was able to adjust many difficulties at the stage of prophylaxis. He was local secretary of the Queen Alexandra Sanatorium Fund which worked so smoothly and efficiently under his supervision. The last year or two in which a considerable number of children have been sent to Davos under the ægis of the fund were joyful years to Lockett, for he was devoted to children and they returned his affection.

NATIONAL FOOD POLICIES

LEAGUE experts in their final report[1] proffer evidence that a sound and positive nutrition policy can benefit a nation's health and prosperity. The report explains simply the broad outlines of good nutrition and the special needs of different age groups and then goes on to show how consumption has increased and changed in recent decades. The changes are almost entirely for the better and in the report are made examples of how alterations in feeding habits are brought about. Sometimes they have been due to propaganda, sometimes to greater accessibility, and sometimes to temporary cheapness which has made people used to buying an article. This happened for instance with bananas, and a mechanism which has happened once can be used deliberately again. The report points out how the changes arise partly from and have their repercussions on agriculture and then analyses some of the factors causing the changes. It is shown how scientific study could assist in using the lessons of the past for better policies in the future, more particularly in regard to agriculture and tariffs. Agriculture has adapted itself fairly successfully, although with some difficulty, during the past 25 years to the changes in the structure of demand, especially where prices have been tempting Changes in the future are likely to be steady, but they could be hastened to the benefit of the consumer and made more profitable to agriculture by suitable official support In particular, agricultural adaptation could be helped by readier access to capital, the purchase of machinery and means of storage, the cost of waiting for fruit trees to mature, and other expenses of changing a farm's produce, all need credit which has hitherto been more easily obtained by industry and commerce than by agriculture Modern methods of storage which allow of the spreading over of supplies of perishable goods should reduce the risks inherent in farming and bring agricultural insurance within the realm of practical politics The report touches on the complicated subject of tariffs and production While small tariffs may be genuinely useful, the higher ones prevailing recently are viewed with grave misgiving, for one reason, the adaptation of agriculture may be impeded as well as facilitated by State action Tariffs, if excessive, may so affect prices as to draw farmers into the production of food for which the demand is shrinking Subsidies to consumption on the other hand may provide assistance equally valuable to agriculture Another reason is the high price at which food may be sold where tariffs are high Although the high price may not reduce the sale of a particular commodity, the purchasing power remaining for others is reduced and must impair nutrition The report gives a table of comparative prices of certain foodstuffs in several countries, the differences between neighbouring States is often conspicuous and the report suggests that in any country where the price of a valuable food is disproportionately high its government should consider carefully whether there is any imperative reason for depriving its people of the advantages of cheaper supply enjoyed elsewhere At present this remark applies principally to France, Germany, Italy, Czechoslovakia, and Switzerland

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[1] See *Lancet* 1935, 1, 507 and 1109.

[2] Colonial Development Advisory Committee. Eighth Annual Report. London: H.M. Stationery Office. Pp. 32. 6*d*.

[1] Final report of the mixed committee of the League of Nations on the Relation of Nutrition to Health, Agriculture and Economic Policy. London: George Allen and Unwin. 7*s*. 6*d*.

THE AQUEOUS HUMOUR AS A SECRETION

WHETHER the aqueous humour is a secretion, transudate, exudate, or dialysate is a problem which has given rise to much controversy in recent years among pathologists, anatomists, and ophthalmologists alike The interest has chiefly centred around the first and the last of these theories Mainly through the work of T Leber towards the end of the last century, the secretory theory received a great measure of support, but with the introduction of more modern methods of chemical analysis the pendulum has swung in favour of dialysis This view has been based on a study of the chemical equilibrium between blood plasma and aqueous humour, the altered constitution of the aqueous humour forming after paracentesis of the anterior chamber, and the alteration in the level of the intraocular pressure following variations in the osmotic pressure of the blood plasma The fact that the older adherents of the dialysis theory maintained that the aqueous humour was stagnant, while others postulated a circulation with its origin at the ciliary body and its exit through the canal of Schlemm at the angle of the anterior chamber complicated the position, since the strong evidence in support of the theory that a through and through circulation is indeed maintained is accepted by modern exponents of the dialysis theory The rate of flow of the aqueous humour has been estimated to be in the region of 1 0 to 2 0 c mm per minute or 0 2 to 0 4 per cent of the volume of aqueous, and the question arises whether the theory of dialysis is compatible with such a rate of flow Friedenwald and Pierce (1931, 1932) have tried to show that the rate of diffusion of crystalloids exceeds that of the flow of the aqueous Robertson (1937) has recently analysed the evidence adduced in support of the dialysis theory It rests on (1) the alleged absence of expenditure of energy in the production of aqueous humour, (2) a chemical equilibrium whereby non electrolytes such as urea, sugar, uric acid, creatinine are equally distributed and electrolytes such as chloride, sulphate, phosphate, sodium, potassium are distributed in accordance with the Donnan equation, (3) the chemical constitution of the aqueous humour which forms after paracentesis, (4) the isotonicity of the aqueous, and (5) the preservation of the level of the intraocular pressure by a balance between the capillary hydrostatic pressure minus the difference in osmotic pressure of the aqueous and capillary plasma Robertson maintains that there must necessarily be an expenditure of energy in the production of the aqueous, because the membrane of the posterior chamber has an irreversible permeability Recent work by A M Walker (1933) moreover suggests that the chemical equilibrium cannot altogether be explained by a Donnan equilibrium Robertson finds no convincing evidence that the chemical constitution of the aqueous which forms after paracentesis is compatible with dialysis, the isotonicity of the aqueous is, in his view, no argument in favour of dialysis Lastly, his own experimental and clinical observations do not confirm the suggested mechanism for the preservation of the intraocular pressure He carried out observations on the intraocular pressure of patients suffering from nephritis with gross œdema in whom the osmotic pressure of the plasma proteins had fallen from a normal of 30 mm Hg to 7 mm These patients were followed throughout the period of their convalescence when œdema disappeared and the plasma proteins had reached normal limits In no case was there any disturbance of the intraocular pressure His general conclusions are that the evidence in favour of dialysis for the production of the aqueous humour is unconvincing and that the older theory of a secretion is more likely to be true

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Prof A W FALCONER is to succeed Sir Carruthers Beattie at the end of the year as vice-chancellor of Capetown University Dr Falconer, who graduated from Aberdeen in 1901, now occupies the chair of medicine in the university

NEXT year when Prof R E PRIESTLEY vacates the vice chancellorship of Melbourne University he may succeed Sir Charles Robertson when he retires from the same position at Birmingham Prof Priestley, who was geologist to the Shackleton Antarctic Expedition of 1907–09, was at one time secretary general of the faculties to the University of Cambridge

Prof MAX THOREK of Chicago will deliver a lecture on Tubo valvular Gastrostomy at the British Postgraduate Medical School (University of London) at 3 P M on Wednesday, Sept 8th

THE War Office has officially announced the formation of a Territorial Royal Army Medical Corps centre in Bristol The centre will be known as the 2nd Southern General Hospital and, in emergency, Bristol Royal Infirmary would be adapted for this purpose as in the European War

PANEL AND CONTRACT PRACTICE

INCAPACITY FOR WORK

THE series of studies and reports on social insurance issued by the International Labour Office has lately received a notable addition in a monograph[1] the fourteenth of the series, on the evaluation of permanent incapacity for work. The subject is of basic importance in the administration of workmen's compensation, and of the invalidity insurance schemes in operation in Europe and elsewhere. In this country there is no separate invalidity insurance scheme, but in many cases the disablement benefit of the health insurance system fulfils the purpose of an invalidity pension, and this volume will be found full of interest to British insurance doctors and administrators. It is rich in information and the subject matter is so well arranged that the reader has no difficulty in finding his way about and picking out what he wants.

The book gives a critical account of the methods employed in a large number of countries to define and evaluate for purposes of workmen's compensation and invalidity insurance permanent incapacity for work and whatever may be the legal terminology adopted, 'permanent' incapacity in practice merely means incapacity of a more or less persistent kind. The evaluation of permanent incapacity is not regarded as a process resulting in the creation of lifelong rights, and the first evaluation is therefore subject to review. There are three conceptions of incapacity: (1) physical invalidity (2) occupational incapacity (3) general incapacity for work and each has its own methods of evaluation.

PHYSICAL INVALIDITY

In evaluating physical invalidity no account is taken of the economic consequences to the worker of his infirmities. The capacity of a normal worker is taken to be equivalent to 100 and the evaluation in a given case is made by reference to a schedule of injuries and infirmities to each of which a percentage of incapacity is attached. In the workmen's compensation laws of Italy Japan U.S.A. (except New Hampshire and California) and Australia (except New South Wales) the percentages are fixed by law and cannot be varied, but in other countries they merely serve as a guide to the authorities determining the question of incapacity. The percentages vary in different countries. For example loss of the right hand is held to give rise to 70 per cent incapacity in Australia 55 per cent in Japan 42.5 per cent in the Union of South Africa and 30 per cent in Connecticut. The use of incapacity schedules has certain advantages. It reduces the need for expert evidence to a minimum and enables evaluation in many cases to be done quickly and without disputes and where wages are low quick settlement of claims is obviously an important consideration. But there are serious disadvantages. The degree of incapacity and consequent economic loss caused by a given injury may vary widely with the occupation usually followed by the disabled worker his age, and other factors; and an award that would be welcomed in the case of one worker might reasonably be regarded as inadequate in another. Schedules are used chiefly in workmen's compensation cases in invalidity insurance other methods are generally preferred.

OCCUPATIONAL INCAPACITY

In evaluating occupational incapacity the question for determination is whether the claimant has been deprived of earning capacity not for all occupations but for some particular occupation or group of occupations. This criterion is mainly employed in countries having a special insurance scheme for salaried employees only. Such schemes aim at preserving the disabled member's social and economic status. In Germany it has been held that a decorator exercising an 'industrial art' cannot be required to take up office work, or a skilled dancer to accept a post as walker on. The field in which this criterion applies varies with the number of the occupations covered by the respective special insurance schemes and where the number is small invalidity pensions may be awarded to persons who could with little difficulty find new employment in an occupation not falling within the special insurance scheme.

In Great Britain where the health insurance scheme applies to non manual workers earning salaries not exceeding £250 a year as well as to manual workers benefit is payable to an insured person who is incapable of following his ordinary occupation though not necessarily incapable of other work, if it is probable that he will within a reasonable time be able to resume his ordinary occupation; it is held that in such a case it would be unreasonable to expect the worker to seek other employment.

GENERAL INCAPACITY FOR WORK

Under the conception of general incapacity account is taken of the possibility that the claimant though unable to do his ordinary work may be able to do other work that may reasonably be regarded as open to him. This is the most usual criterion. The definition of incapacity most generally adopted for invalidity insurance purposes is that first laid down in Section 1254 of the German social insurance code:

> A person shall be deemed to be disabled if he is no longer capable of earning in any employment suited to his strength and ability which can reasonably be assigned to him in view of his training and previous occupation one-third of the sum usually earned by a physically and mentally sound person of the same kind with similar training in the same district.

Under this definition an insured person may not be required to take up work which on account of his infirmity or on other grounds would be dangerous for him to attempt. Nor could a person insured as a wage-earner be required to set up in business on his own account, or any person to accept employment at a great distance from his home. But the application of this or any definition to a particular case may give rise to serious difficulty particularly in invalidity insurance in workmen's compensation the problem is simpler for in many cases the question at issue is not the right to compensation but what amount of compensation is due.

One difficulty arises from the question whether in evaluating incapacity account should be taken of the unemployment situation. Theoretically that situation is irrelevant both in workmen's compensation and invalidity insurance. The purpose of both is to compensate for loss of earning power caused by disease or accident and if the unemployment situation were admitted as a factor in evaluation both would take on the function of unemployment insurance In a case decided in June, 1932, the German supreme social insurance court held that—

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[1] The Evaluation of Permanent Incapacity for Work in Social Insurance. International Labour Office London P. S. King and Son 1937 Pp 375 10s. 6d

> "In evaluating incapacity no account should be taken of actual prospects of employment, even during a long period of depression, since otherwise charges would be placed on invalidity insurance which it is unable to bear More over, if the economic situation were to improve, the pensions already awarded would have to be withdrawn."

In practice, however, the unemployment situation is, in varying degree, taken into account When unemployment is so prevalent that even able bodied workers are unable to find work a partially disabled worker has no chance in the labour market, and whatever the theoretical position may be this is a consideration which in practice does operate in evaluating incapacity.

THE DOCTOR'S FUNCTION

Among the numerous interesting problems discussed in the monograph, of which only a few can be indicated here, is that of the doctor's function in evaluating incapacity Everywhere it is recognised that the authority deciding the question of incapacity must be furnished with medical information, and it is generally held that the doctor's function is limited to providing the authority with an expert opinion on the medical questions involved But it is sometimes contended that the authority should include a medical member, or even that it should be entirely medical Weighty reasons are given against this extension of the doctor's function, but it is noteworthy that in the French invalidity insurance scheme the local committee dealing with appeals against the decisions of the insurance society is composed wholly of doctors

Medical Benefit

Tribute is paid in the recent report of the Ministry of Health to the part taken by the medical profession in the working of medical benefit under the Insurance Acts, apart from actual services rendered by practitioners to their insured patients The report says

> "In the actual administration of the service the medical profession plays an important part It is represented on the insurance committee for each county and county borough, which includes also representatives of insured persons, local authorities and pharmacists It has equal representation with insured persons on the subcommittees investigating complaints against doctors Through the panel committees (which represent the insurance doctors of each area) it assists in determining questions of alleged extravagance in prescribing medicines and through the local medical committees (which represent the medical profession as a whole in the area, but are in many places identical with panel committees) it expresses an opinion on questions whether a particular form of treatment is within the doctor's contract Its representatives are also associated with those of the Minister in the hearing of appeals against the findings of insurance committees in disciplinary cases in advising the Minister before he decides to withhold money from a doctor for failure to attend or treat a patient as required by his terms of service and in determining the amounts to be allocated to each area out of the funds available for the remuneration of the doctors

Having been in operation for almost a quarter of a century, the report continues the insurance medical service is conducted on well established lines and there is little change which can be attributed to a particular year Such changes as occur in the content of the service are brought about gradually and automatically with developments in general medical practice amongst the community as a whole, and with the progress of medical education, since the insurance doctors are required to give treatment of the same standard as they would give to their private patients Over a period of years there has been a tendency for the number of insurance doctors to increase rather more rapidly than the insured persons, so that on the average there has been a slight reduction in the number of patients for whom each doctor is responsible During the year under review—namely, April, 1936, to March, 1937—however, there has been an abnormal increase of about 409,000 in the number of insured persons entitled to medical benefit, partly owing to the operation of the Act of 1935, which restored to benefit a number of persons who had lost their title owing to long unemployment, and partly to the increased volume of employment resulting from the turning economic prosperity When the Government's intention to include juvenile employed persons in the scheme of medical benefit is implemented by the necessary legislation about one million at the outset will be added to the number of beneficiaries in Great Britain

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THE LANCET 100 YEARS AGO

September 2nd, 1837, p 843

From a leading article

The senate of the new metropolitan university—the University of London—is now, in all probability, employed in preparing the curriculum of studies to be pursued by such students as may desire to present themselves for examination before the members of that institution This curriculum ought to form the commencement of a new era in the history of education in this country We have suffered severely under the monstrous abuses which have prevailed in our old and aristocratic institutions, and we earnestly hope that the new university, the offspring of Reform, true to the principles which gave it birth, will, at once, adopt a large and liberal plan of medical education, rejecting the sordid and absurd restrictions which abound in the system so pertinaciously adhered to by its predecessors

Without intending, on the present occasion, to pass in review the entire system of medical education, we shall enter on the most prominent points of consideration in discussing this subject, namely, the complete abolition of the certificate system , the expediency of conducting all examinations for medical degrees in public, and the necessity of *making all such examinations strictly practical in their nature* The certificate system is a fraud rendered a double fraud by its inventors and supporters Were we to ask one of these men ' what is a certificate, or why is it enjoined ? " his answer would be, that ' a certificate is a piece of paper which proves the diligent attendance of the pupil on the lectures of his teacher and, moreover, insures the competency of the teacher because none but men of eminence are authorised to grant it " There is not a pupil in London who is ignorant of their real value, who does *not* know that they may be obtained without the *ennui of attending the prosy discourses of the "recognised"* lecturers , aye, or without ever having set eyes upon the ticket mongers faces Let the pupils elect freely their own teachers The want is theirs Their sense is acutest for discovering the means of satisfying the hunger after knowledge No bad teacher ever sat long in the chair of a professor as the *freely elected* representative of science Abolish certificates, says the medical reformer, but, at the same time, make the examination a searching inquisition, a thorough and practical enquiry the candidate should be led to the bedside of the patient and there made to undergo a strict examination into his proficiency in medical and surgical knowledge The examination having been made a thoroughly practical one, the next step must be that of ensuring its publicity Publicity would inevitably preserve them from the insolent brow beating, and the brutal and dastardly insolence to which they are now successfully subjected

SPECIAL ARTICLES

THE PHOSPHATASE TEST FOR EFFICIENT PASTEURISATION

BY W A HOY

AND

F K NEAVE B S.A

(From the National Institute for Research in Dairying University of Reading)

IN 1935 Kay and Neave[1] published in this journal an account of the application of what was then a new method—the phosphatase test of Kay and Graham —for assessing by examining the processed milk itself the efficiency of pasteurisation It will be recollected that one of the most significant features of the test is that over all ranges of temperatures and times *Mycobacterium tuberculosis* is destroyed rather more quickly than the phosphatase so that a heated milk which does not contain the enzyme no matter what the particular conditions of heating may be regarded as having been sufficiently heated to destroy any *M tuberculosis* originally present and hence all the common pathogenic organisms also By using the delicate test B ' on designated pasteurised milk as sold to the public and to school-children Kay and Neave found that many pasteurisation plants both in London and elsewhere were in 1935 turning out a product which was improperly processed

During the two years which have elapsed since the publication of these findings, firms engaged in pasteurisation have had opportunities of taking advantage of improvements in plant design, of improving their own operation technique and of improved methods of laboratory control It is of interest therefore to compare the results obtained in a recent stock taking survey using the same test as before and covering areas similar though not quite identical with those covered in 1935 Though neither is on a large scale the surveys are, we believe sufficiently representative to enable some general conclusions to be drawn as to trends in pasteurisation efficiency over the past two years

In the present, as in the former survey the samples have come from London boroughs from provincial towns and some from rural districts They have all been sold or have been intended for sale as designated pasteurised milks Either they were bought by one of us over the counter or otherwise direct from the distributor or taken by arrangement with the local authority from consignments being sent for sale in schools, or collected by local authorities. So far as we are aware there has been no selection of better or poorer distributors.

RESULTS

The figures shown in the Tables I to V as blue units have the following significance :

Below 2.3 *units* —Milk has been heated to such a temperature and for such a length of time that pathogenic organisms are destroyed the processing is satisfactory

Between 2.3 *and* 6 *units* —Some small error in pasteurisation technique ; a tightening up of the operating technique and/or a careful examination of the functional efficiency of the plant is required

Above 6 *units* —Some serious error in the pasteurisation technique

Above 10 *units* —Some gross error in pasteurisation technique ; either the plant or the management is very seriously at fault

The figures both in Table VI and VII are based on too few determinations to be reliably expressed on a strictly quantitative scale What one can say is that improvement throughout the two years has been definite particularly in the larger firms where in many instances well trained technical men are now in charge of the plant and the laboratory control is competent

Application of the Phosphatase Test

TO LOW TEMPERATURE PASTEURISATION

Like many other milk tests the phosphatase test may be used for two different purposes

(*a*) *Advisory* to determine whether a plant in which time and temperature of exposure appear to be correct is really functioning well and if not to assist in tracking down the cause of the fault

(*b*) As a help in *enforcing the law* to make sure that licensees are carrying out their duties according to the Milk Special Designations Order 1936

From the advisory standpoint the test is most useful when the testing is carried out by or for an experienced person who is in close touch with the plant and has available all the other relevant data (temperature charts bacteriological findings diagram of details or plan layout &c) From the standpoint of ensuring that licensees are not infringing the law if a properly conducted phosphatase on the pasteurised milk gives a positive (i.e more than 2.3 blue units) this provides in our experience convincing evidence[2] apart from any other information that may be available regarding the plant that heating has been insufficient and that the legal requirements have been infringed to an extent proportional in seriousness to the number of blue units found. The following examples from among those that have been investigated by us during the last three years are of cases where a distinctly positive though not very high phosphatase test has shown that the pasteurisation plant has not been functioning well though , time and temperature appeared to be correct

Example 1 —Samples of bottled pasteurised milk as supplied to school-children from a certain dairy gave a positive result on several occasions On investigation it was found that the bottling plant was first being used for Grade A T T milk Owing to the high quality of the raw milk and the fact that the machine was to be used at once the bottling plant was only rinsed apparently rather perfunctorily with clean water direct from a hose Negative results were obtained only when the interior surfaces of the whole of the plant were washed quite free from traces of raw milk

Example 2 —This milk was also supplied in bottles to school-children After the positive result had been obtained a visit was paid to the dairy with a representative of the firm who supplied the pasteuriser An accurate thermograph was in use and there was no doubt that the time and temperature of heating were both correct The outlet valve of the pasteuriser was found however to be very loose in its fitting It was then proved that milk was escaping from the holder via this fitting into the outlet

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[1] Kay H D and Neave F K. (1935) *Lancet* 1 1510

[2] An occasional anomaly—i.e. a figure of slightly above 2.3 units in a properly pasteurised milk is not absolutely impossible in milks in which certain unusual organisms have developed freely before the milk has been pasteurised. Such an anomaly only occurs in milks which have been in an advanced state of deterioration before pasteurisation with bacterial counts of the order of tens of millions i.e milk which no responsible distributor would sell for liquid consumption raw or pasteurised

TABLE I

(a) SOLD TO PUBLIC AS "PASTEURISED MILK"
London Boroughs

Ref No	Month in 1937	Size of plant and firm indicated by a letter	Numerical result of test (blue units)	Findings
594	Feb	Small A	4 1	Incorrectly pasteurised
597	"	" A	1 6	
623	Mar	" A	8 5	Grossly underheated
599	Feb	" B	3 6	Incorrectly pasteurised *
737	June	" C	14 0	Grossly underheated
596	Feb	Interm D	1 1	Pasteurised.*
625	Mar	" D	2 5	Incorrectly pasteurised *
627	"	" D	30 +	Raw or grossly underheated *
587	Feb	Large L	1 1	Pasteurised
617	Mar	" F	0 9	
593	Feb	" E	1 1	
622	Mar	" L	1 0	
589	Feb	" F	1 2	
618	Mar	" F	1 1	
595	Feb	" F	1 3	
624	Mar	" F	1 1	
591	Feb	" G	1 1	
620	Mar	" G	0 9	
644	"	" G	1 0	
641	"	" H	1 1	
592	Feb	" I	1 4	
621	Mar	" I	1 0	

* Old plant New plant now being installed in both cases

All the above samples were bought in the ordinary way from shop cart or barrow and were all being exposed for sale as (designated) pasteurised milk

TABLE II

(b) SOLD TO PUBLIC AS "PASTEURISED MILK"
Towns (population above 20 000) or cities other than London

556	Jan	Small J	1 0	Pasteurised
608	Mar	" J	1 1	
560	Feb	Interm K	1 5	
576	"	" K	1 3	
609	Mar	" K	30 +	Grossly underheated *
650	"	" K	1 8	Pasteurised ‡
549	Jan	Large L	1 6	Pasteurised
559	Feb	L	Below 2 3	
551	Jan	+	4 3	Incorrectly pasteurised
557	Feb	+	1 1	Pasteurised
579	"	+	1 3	
580	"	+	1 1	
611	Mar	+	1 0	
612	"	+	4 8	Incorrectly pasteurised
630	"	+	1 8	Pasteurised
637	"	+	18 0	Grossly underheated
659	"	+	4 3	Incorrectly pasteurised
686	April	Large M	1 0	Pasteurised

+ = Samples obtained under circumstances which prevent certainty of the sizes of the plants used Almost certainly a large plant in each case

* It was ascertained that milk left holder at 120° F

‡ Defective working (sample 609) now repaired

TABLE III

(c) SOLD TO PUBLIC AS "PASTEURISED MILK"
Rural Areas

Ref No	Month in 1937	Size of plant and firm indicated by a letter	Numerical result of test (blue units)	Findings
542	Jan	Small U	5 4	Incorrectly pasteurised.
569	Feb	" U	2 0	Pasteurised
570	"	" U	2 0	
578	"	" U	1 1	
656	"	" U	1 4	
660	Mar	Interm Z	2·0	
537	Jan	Large AA	2 1	
539	"	" AA	1 8	

pipe and pump leading to the cooler As the pipe line was closed and the operator was inexperienced the leak went unnoticed until a positive result with this test indicated a fault which might have had a dangerous sequel

Example 3—An advisory visit was paid to a dairy where a pasteuriser was in operation The vat itself was heavily insulated, but between the holder and the outlet valve there was a dead end consisting of several inches of bare pipe After the milk had been held at 146° for 30 minutes the first milk from the valve when subjected to the phosphatase test gave a positive result

Example 4—Bottled pasteurised milk from this plant gave irregular phosphatase results showing occasionally considerable errors of pasteurisation Previous observations with the same type of plant had shown that on occasions the first milk from the holders ran out at a lower temperature than the remainder At first this was thought to be entirely due to lack of agitation during holding, but sometimes when the average temperature should have been 145° F temperatures below 140° F were recorded It was then realised that large fluctuations in the rate of heating of the preheated milk occurred, due in part to a faulty steam control valve, and in part to the too numerous duties imposed on the plant operator As a consequence the first portion of milk flowing into the empty vat was not infrequently underheated In cases where the underheated milk was followed by milk at higher temperatures (in sufficient quantities, indeed to have raised the average temperature of the whole well above the pasteurisation minimum) the colder denser milk, in absence of agitation, remained at the bottom of the vat without appreciable admixture with the hotter milk above it Hence samples of the first milk out of the holder sometimes gave a positive phosphatase test, whilst later samples *from the same vat* were negative The test now permits a more careful control to be kept over errors of this type

The causes of the positive phosphatase in examples 1 to 4 respectively were thus (1) The use of the same bottling plant for raw and pasteurised milk (2) Leakage of unheated milk from an in-vat pasteuriser (3) Uninsulated dead end between vat and emptying valve (Flush valves are now being fitted with this make of plant) (4) Fluctuating temperature of the milk from the preheater combined with absence of agitation in an insulated holder

TO HIGH TEMPERATURE SHORT TIME PASTEURISATION

The phosphatase test is also of value in controlling the efficiency of the high temperature short time process of pasteurisation *Thus in two series of* carefully controlled experiments using two different types of apparatus (the Stassano and the A P V type), in no case in which the recommended temperature

TABLE IV

(d) SOLD TO SCHOOL-CHILDREN AS "PASTEURISED" MILK

London Boroughs

Ref. No.	Month in 1937	Size of plant and firm indicated by a letter	Numerical result of test (blue units)	Findings
681	April	Small S	1 4	Pasteurised.
698	May	S	2·0	
661	April	Large N	1 3	
665		N	1·6	
6 3	—	N	1 8	
660		O	1·0	
704	May	O	1 5	
667	April	P	1·0	
668		P	4 1	Incorrectly pasteurised
670		P	6·0	
676		P	3 3	
671		E	1·0	Pasteurised
683		E	1·0	
709	May	E	1 3	
677	April	Q	1 1	
680		Q	1·0	
690	May	Q	1 3	
711		Q	1·4	
695		R	1 3	
705		R	2 1	
710		R	1 4	

In a larger series 5 samples out of 51 were incorrectly pasteurised—i.e. some 10 per cent

TABLE V

(e) SOLD TO SCHOOL-CHILDREN AS "PASTEURISED" MILK

Areas other than London

555	Jan.	Small T	1 1	Pasteurised.
505	Feb	T	1·6	
513	Jan	U	15 +	Grossly underheated.
515		V	1 1	Pasteurised
516		Interm W	1 5	
504		W	3 3	Incorrectly pasteurised
680	Mar	W	1 1	Pasteurised.
517	Jan.	K	5·5	Incorrectly pasteurised
603	Feb	K	2 3	Pasteurised
605		K	1 5	
632	Mar	K	1 2	
565	Feb	Large X	1·9	
583		X	1 3	
634	Mar	X	1 1	
574	Feb	Y	1 8	
607	Mar	Y	1 3	
613		Y	30 +	Grossly underheated
575	Feb	F	1 4	Pasteurised
614	Mar	Q	1 1	

In a larger series 6 samples out of 31 were incorrectly pasteurised—i e some 0 per cent.

TABLE VI

COMPARISON OF SUMMARISED RESULTS IN 1935 AND 1937

Where pasteurised milk sold	Percentage of samples failing to pass the phosphatase test ("B")					
	1935 survey			193 survey		
	Se	Mi	Total.	Se	Mi	Total
To public in London boroughs	32	12	44	0	23	32
To public in towns above 20 000 inhabitants (other than London)	17	17	34	11	6	17
To school children in London boroughs	33	13	46	0	14	14
To school-children in areas other than London	33	25	58	11	11	22
Total percentage (not average)	29	18	4	5	14	22

Se and Mi. = Serious and minor errors

The percentage quantity of faulty milk in London appears greater than it really is as a very large proportion of the whole is sold by the large firms who now process satisfactorily

The proportion of serious errors from all sources has diminished from almost one third to less than one tenth of the samples examined

TABLE VII

COMPARISON OF PASTEURISATION PERFORMANCE IN RELATIONSHIP TO SIZE OF PLANT 1935 AND 1937

Number of serious errors in 100 samples

Small plants		Medium sized plants		Large plants.	
1935	*1937*	*1935*	*1937*	*1935*	*1937*
36	17	3	13	32	4

and other conditions were used did the processed milk give a positive phosphatase test

Table VIII gives some recent findings obtained under commercial conditions with two other types of high temperature short time heating plant, in which the temperatures used were lower than those recommended for any high temperature short time process and considerably lower than those used in

TABLE VIII

PLANT A.—*Small tubular heater hand controlled considerable fluctuations in temperature*

PLANT B—*Danish type rotary heater large volume of circulating water temperature automatically controlled to ± 1 F*

PLANT A		PLANT B	
Maximum milk temperature F	Phosphatase	Maximum milk temperature F	Phosphatase
152	30 +	157	3·2
154	0	157–159	2·0
154	12·2	157–159	1 8
154 5	14·0	158	9 1
155	10	158	2 1
158	3·0	158	2 2
159	Less than 2 3	1 0	2·0
		159–160	2·0
		159–160	2 1
		159–160	1 4

Tests on milk after bottling

the Stassano or the A P V plants In the operations summarised in Table VIII, the heating process was employed primarily to enhance keeping quality

In both these plants, for consistently “ negative ” phosphatase results (below 2 3 blue units), a constant temperature of 160° or above is desirable The period during which the milk is exposed to this temperature is, in both cases, probably of the order of 20 seconds , no exact statement is at present possible as to the precise period during which any given sample of milk has been heated in either of these types of apparatus

The data in Table VIII, together with the Stassano and A P V data just quoted, afford further evidence of the applicability of the phosphatase test as a control of the efficiency of the “ flash ” method

Summary

(1) A survey, using the phosphatase test, of the efficiency of pasteurisation of *designated* pasteurised milks in London and elsewhere has shown a considerable improvement during the last two years

(2) This improvement is particularly marked in the milk processed by the larger distributing firms having their own control laboratories, though it is also to be observed to a lesser degree in that of firms of intermediate or of small size

(3) In the two latter classes, however, the efficiency is still far from satisfactory [3]

(4) The phosphatase test has proved useful in advisory work in assisting dairies to track down faults in the functioning of their pasteurisation plants (Examples are given)

(5) The test seems equally applicable to the control of the efficiency of high temperature short time pasteurisation plants

We are indebted to *Prof H D Kay for his encouragement* and advice throughout the course of this work, and to various medical officers of health and sanitary authorities for their kind collaboration in obtaining samples of milk

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

HEALTH BY RADIO

ON August 18th I had the privilege of attending the fourth anniversary of the Health Hunters radio programme of the New York State Department of Health over the powerful station W G Y The play presented was written, acted, and produced entirely by members of the department's regular staff It is hard to believe that any professional group of actors could have given a more convincing performance The drama concerned a farm woman who had stepped on a nail when tending her turkeys during the night and was treating the wound with stoical Yankee indifference The tact and generosity of the young rural practitioner emerged in the play as well as the seriousness of the danger of tetanus in punctured wounds This last moral was driven home by a simple but effective lecture occupying four minutes at the close of the play The original programme from this station, which has been open for some 15 years, took the form of short lectures , in 1933 the talks were dramatised in a series of plays of which nearly 200 have now been performed, and have apparently created widespread interest The plays are recorded on gramophone discs which are sold at cost price to any organisation interested in health education

PURSUIT OF TUBERCULOSIS

The mortality rate from tuberculosis in 1933 was less than a third of what it was in 1900 in that part of the country for which statistics are available Still, however, tuberculosis remains the first cause of death between the years 20 and 35 Several leaders in the public health field have recently urged the need for further measures to combat it Among them Prof W H Frost of the Johns Hopkins School of Hygiene recently gave a heartening address to tuberculosis workers in New York He is not willing to give them credit for all the success so far achieved but he presents convincing arguments that their efforts have been fruitful The measures that have been taken to limit the spread of the tubercle bacillus may have been insufficient to prevent eventual infection of nearly everybody, but they may still be of great effect in mitigating the severity of resulting infections, because of reduced frequency and dosage Unlike other contagious diseases tuberculosis depends for its spread upon the degree of severity of the disease If, in successive periods of time, the number of infectious hosts is continuously reduced, the end result of this diminishing ratio, if continued long enough, is likely to be extermination of the tubercle bacillus

As the number of open cases diminish vigilance in their control must be increased At the forefront of his programme Dr Frost puts a provision for isolation of all open cases in sanatoria for the full period of their infectivity With this he combines social support of the families of the tuberculous, adequate not only to maintain but when necessary to raise their standard of living, for poverty reinforces the risks of intimate contact No mention is made of the tuberculosis colony which has singularly failed to impress the imagination of tuberculosis workers in this country The discovery and energetic treatment of the early non infectious cases are not overlooked, although less emphasised by Dr Frost On the other hand, they are the keystone of the programme in Detroit where the most ambitious attack on tuberculosis yet staged in this country is now under way Detroit's health commissioner, Henry Vaughan, who is a doctor of public health but not of medicine, has been conspicuous among health administrators for (1) his ability to secure the coöperasion of the practising medical profession and (2) his success in convincing the fiscal authorities of the economic benefits of public health work In December, 1936, the city council authorised the department of health to add $200,000 per annum to its annual budget to be used exclusively for case finding work Of this, $40,000 is allotted to tuberculin testing and an equal sum for X ray examinations It is expected that a million dollars will be spent in this way during the next five years The family physician exercises his judgment as to whether these tests should be paid for by the suspect or by the city, and in the latter case the city assumes responsibility Each person who has a negative tuberculin test costs the city one dollar , those with positive tuberculin tests who require subsequent radiological examinations and sometimes consultation may cost the city as much as $5 each Between Feb 1st and May 21st of this year (the figures were prepared for the Atlantic City meeting of the A M A) 33,307 tuberculin tests had been given, of which 22 per cent were positive ,

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[3] This is not meant to imply that the smaller *plants* are necessarily less satisfactory than the larger ones We have been in touch with one small batch pasteuriser (with an efficient operator) over a period of several months and no failures have been encountered

5122 persons had had radiological examinations and 242 new active cases of tuberculosis had been discovered Three groups in the population are given precedence in searching for these early cases those in the practice of the physician whom he suspects of being tuberculous household contacts of known active cases and persons residing in districts of excessive tuberculosis mortality Agreements have been signed by 800 Detroit physicians to coöperate with the department of health in this campaign

MEDICINE AND THE LAW

Legal Interest in Blood group Tests

THE *Law Society's Gazette* published for members of the Society only contains in its August number a note on blood group tests in affiliation proceedings Solicitors are well aware of the notorious uncertainty of the oral evidence in bastardy cases; they would welcome any scientific method of arriving at the truth For this reason the Law Society it seems has approached the Home Office as to the possibility of making better use of the system of blood group tests The Home Office is reported to have replied in general terms that it is desirable that the system should be better known. The note wisely inculcates a proper caution in estimating the possibilities of these tests. It refers to the researches of Landsteiner in America amongst others and states that they are said to have established that the blood of a human being will be found to belong to one of certain types and that the characters of none of these types can appear in the blood of a child unless it be present in the blood of one or both of the parents Due emphasis is laid on the fact that the present value of the tests is to establish a negative They can prove that A is not the father of B's child The note suggests that non paternity is established in about one case out of three It is said that the tests are widely used in Europe and that their use is growing in the United States

In the English courts reference to the blood group tests is at present mainly a matter of tactics. Offers to submit to the tests are paraded as indications of good faith and veracity; the side which refuses tends to be discredited. No doubt, however the advocate's knowledge of the possibilities is growing Apart from the use of blood-group tests in affiliation proceedings, a barrister or solicitor who practises in criminal cases may have to deal with the question whether blood stains on the clothing of an accused person are human or non human, and if human, whether they are the man's own blood or no Among legal text books which discuss these points the new edition of Wills on Circumstantial Evidence, just published may be mentioned. It contains a note by Sir William Willcox on the precipitin test and an appendix by Dr James Davidson director of the Metropolitan Police Laboratory on blood grouping The legal reader can thus learn that it is now possible to ascertain whether blood is human or not and to distinguish the group to which the human blood belongs though it is not yet possible to say from which particular person the blood came

Child's Death after Throat Operation

A recent inquest in Middlesex was held upon a child eight years old who had died in hospital during or after an operation on her throat and nose The operating surgeon described the child's condition. There was chronic infection of both cavities in the upper jaw An operation had previously been performed for the removal of the tonsils and adenoids He operated on the nose to drain the antrum and made an opening for this purpose After the anæsthetic had been given he inserted two pledgets soaked in a cocaine solution. The coroner put to the witness that the pathologist's report attributed death to shock and to the inhalation of fragments of the adenoids during the operation How he asked did these fragments get into the lung? One fragment was found in the lung and one in the windpipe though neither was large enough to cause an obstruction which would prevent a reflex cough The surgeon said he did not think the pledgets, which had been squeezed out contained so much cocaine as to stop a cough Dr Alfred Piney the pathologist who conducted the post mortem examination, described how he found small pieces of adenoid tissue in two places In his opinion the child did not die from suffocation but from shock due to inhaling these fragments In answer to the coroner he said that he had himself known instances where blood and tissue had been found in the bronchi after similar throat operations The cause of death was undoubtedly shock a not uncommon cause of death in all operations The irritation in the windpipe caused the heart to stop; once it had stopped it was very difficult to restart it The witness estimated that about one person in 10 000 would die from this operation if the child had coughed she would not have died The operation as performed was the only accepted method. Though there was risk in all these operations the risk was minute Asked by a juror whether the result indicated any lack of skill on the part of the operator Dr Piney answered in the negative The fragments he said did frequently get away but generally ran out of the mouth with the blood the question of skill scarcely arose as there was no known procedure for preventing what had apparently happened in this case The jury returned a verdict of death by misadventure

Insanity and Workmen's Compensation

In a recent case at Walsall it appeared that a miner met with an accident in the pit and sustained a cut on his finger Sepsis followed and an award was made on the basis of total incapacity Afterwards he came back to work but his mind became affected and it was necessary to remove him to a mental hospital. It was claimed on his behalf that the insanity was part of the accident no accident no insanity The employers, on the other hand, contended that the cause of the insanity was more remote The man's mind they said had become unbalanced through his brooding over the accident his present condition was not so directly due to the accident as to entitle him to recover under the Workmen's Compensation Act The county court judge came to the conclusion that there was an element of mental shock in the original accident and that there was a sufficiently close connexion between that shock and the present mental illness He awarded the miner 10*s* 2*d* per week Mention was made of a possible appeal.

ROYAL NORTHERN HOSPITAL LONDON —An anonymous donor has offered this hospital £40 000 provided that a similar amount is contributed by others This gift is in connexion with the special appeal for £350 000 which is being made for the reopening of wards and for the renovation and rebuilding of certain parts of the hospital delinquent ? There must be many children in approved schools who are equally deserving of a similar label, and we should soon arrive at the definition of a moral defective as a delinquent for whom, for some reason or other, no place could be found by the courts

I speak under correction but I have the impression that, in practice, few cases are now certified as moral defectives, unless there is clear evidence of defective intelligence associated with the anti social conduct

I am, Sir, yours faithfully,

Lingfield Surrey, August 25th J TYLOR FOX

ŒSTRIN IN TREATMENT OF CUSHING'S SYNDROME

To the Editor of THE LANCET

SIR,—The letter of Dr Charles W Dunn in your issue of August 7th is of great interest, and it is satisfactory to learn that he also obtained relief of the severe headaches occurring in this condition by *means of injections of Progynon B (Schering)* He makes several observations, however, which call for remark —

1 Despite intensive therapy I was unable to obtain reduction of the raised blood pressure

2 On theoretical grounds Dr Dunn recommends increased dosage of progynon during the pre menstrual period, but, since these patients have either amenorrhœa or quite irregularly spaced periods, it would seem difficult to carry out this recommendation in practice

3 It is impossible to agree that Case 1 in my series belongs to the adrenogenital syndrome, since laparo tomy was specially performed and no abnormality of adrenals or ovaries was present

4 The cost of œstrin therapy must be borne in mind, especially if treatment is to be continued over a period of from one to four years as advocated by Dr Dunn Progynon B oleosum forte (Schering) costs approximately £5 per 1,000,000 units Had it not been for the generosity of Messrs Schering, my clinical trial, continued over a period of some seven weeks, would therefore have cost approximately £135, or, at hospital rates, about £100

It is to be hoped that synthesis of these substances will one day render possible a reduction in the cost

I am, Sir, yours faithfully,

A MORTON GILL

The Middlesex Hospital, W August 20th

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdrs M. Brown to *Vindictive* (on comm g), and A W McRorie to *President* for course

Surg Lt (D) H C Brewerton to *Pembroke* for R N B

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lts N A Vernon to *Drake* for R N B , and G F Jones to *Pembroke* for R N B

Surg Sub Lt L S Anderson to be Surg Lt

Surg Lt Comdr W T R Chapman to *Caledonia*

ROYAL ARMY MEDICAL CORPS

Maj A G Harsant O B E , is secd for serv under the Foreign Office

Short Service Commissions Lt J F Wilson to be Capt

Lts (on prob) restd to the estabt F T Moore, and is confirmed in his rank , and R A Smart

SUPPLEMENTARY RESERVE OF OFFICERS

To be Lts Lt E H Travers, from R A , T A Res of Off , and D M I Harmar

ARMY DENTAL CORPS

Maj A E Webb, having attained the age for retirement, is placed on ret pay

Short Service Commission Lt A E Allan to be Capt

TERRITORIAL ARMY

Lts A H L Baker and C H G Price to be Capts

Second Lt S H Heard from 5th Bt R W K., to be Lt

P J O'Connell and M I Silverton to be Lts

G D Kelly (late Cadet Serjt , Durham Sch Contgt , Jun Div , O T C) to be Lt

John MacMillan (late Offr Cadet, Aberdeen Univ Contgt (Med Unit) Sen Div O T C) to be Lt

TERRITORIAL ARMY RESERVE OF OFFICERS

Maj A O Bekenn, from Active List, to be Maj

ROYAL AIR FORCE

Wing Comdr G P O Connell to R A F Depôt, Uxbridge or duty as Medical Officer

Dental Branch —Flying Offr H B Shaw ceases to be seconded to Guy s Hospital

Flying Offr L C Bellsham Revell is promoted to the rank of Flight Lt

AUXILIARY AIR FORCE

No 502 (Ulster) (Bomber) Squadron : C W Kidd is granted a commission as Flying Offr

No 605 (County of Warwick) (Bomber) Squadron Flight Lt J S Jerome, M C , relinquishes his commission on completion of service and is permitted to retain his rank

INDIAN MEDICAL SERVICE

Col A A McNeight, V H S , retires

Lts (on prob) to be Capts (on prob) M C L Smith, B M. Wheeler, C H Bliss, A M McGavin, J D O'Shaughnessy, J E O'Donnell, D R Cattanach, W J Young and A H W Mitchell

Indian Medical Department —Lt (Sen Asst Surg) A L Hudson to be Capt (Sen Asst Surg) Asst Surg (1st Cl) E A Cotton to be Lt (Sen Asst Surg)

DEATHS IN THE SERVICES

Lt Col CHARLES WILLIAM HENRY WHITESTONE, who died on August 23rd at Charmouth, was born at Waterford in 1864 the youngest son of Mr B E Whitestone of Dublin He was educated at Trinity College, qualifying in 1887, and holding a house surgeoncy at Sir P Dun's Hospital Entering the R A M C he served in the Tirah campaign and elsewhere in the North West Frontier, India (1897–98), and in the South African war (1899–1902), where he was awarded the King's and Queen's medals In 1913 he became lieut colonel and in the following year was present at the retreat from Mons when he won the medal and clasp

Lt Col GEORGE THOMAS LANGRIDGE, who died at Bournemouth on August 28th, was born at Bath in May, 1849 He qualified from St Bartholomew's Hospital in 1871 and won the Herbert prize at Netley Two years later he was commissioned surgeon in the Army Medical Department just at the time when medical officers (with the exception of those belonging to the household troops) ceased to be regimental officers He served in the Afghan War (1878–80) took part in the capture of Kabul and two expeditions to Maidan, being awarded the medal with two clasps He also served in the Transvaal cam paign in 1881 and with the Natal field force He retired in August, 1899

OBITUARY

DAVID CONNOR KIRKHOPE M D Glasg , D P H

Dr Kirkhope died on August 25th three months after his retirement from the post of medical officer of health for Tottenham which he had held for 24 years. He was educated at Queen s University Belfast and went on to Glasgow where he qualified in 1895 and became resident assistant at the Western Infirmary He then returned for a time to Belfast as honorary assistant pathologist at Queen s After being called to the bar at Gray s Inn and the Middle Temple he took his M.D in 1906 and the D P H in the next year and was appointed assistant M O H to Leyton. In 1913 he followed J T Butler Hogan as M O H and school medical officer to the Tottenham urban district council, as it then was His predecessor had been deeply interested in the housing of the working classes and Kirkhope succeeded to this interest And combining as he did the qualities of professional ability leadership and organising genius he became an outstanding health officer in a period which saw the birth of the school medical and child welfare services and was instrumental in raising his department to a primary place in local government affairs A cultured and talented man always ready to give practical assistance and advice Kirkhope leaves a memory of work worthily and efficiently done There was abundant testimony to this effect at the time of his retirement under the age limit in May

[Photograph by Elliott & Fry

DR. KIRKHOPE

GEORGE EDWARD LOVEDAY, M B Camb

Dr Loveday who met his death by drowning on August 25th when on holiday in Norfolk had been director of the clinical laboratories at Manchester Royal Infirmary for more than 30 years Educated at Giggleswick School and Caius College Cambridge he took the natural sciences tripos in 1898 and stayed a further year to work at pathology He went on for his clinical work to St Bartholomew s Hospital, from which he qualified in 1902 and then returned to Cambridge to be house surgeon at Addenbrooke's Hospital After another resident appointment at the Salop Infirmary he worked for a year in Sir Almroth Wright s institute at St Mary s Hospital and came under the spell of laboratory methods for detecting disease and assessing its progress His call to Manchester in 1906 to direct the clinical laboratory of the old infirmary in Market-street was the direct outcome of this interest and in association with Ramsbottom and others he did a number of investigations on phagocyte-stimulating substances in the blood and later became reader in pathology at the university During the war he was attached to the 57th General Hospital first in Manchester and then in France Soon after his return he got together a panel of rugby footballers to act as blood donors thus forming the nucleus of the present voluntary transfusion service used by Manchester and Salford hospitals Some years ago he drew up plans for the new department of clinical pathology which was opened in 1931 and is one of the best equipped of its kind in the country His early work in vaccine therapy ultimately resulted in a large inoculation department at the infirmary and in an extensive consulting practice outside Loveday himself continually inaugurated and supervised the innumerable new methods of laboratory diagnosis and treatment as they came into use and retained an expert and up to-date knowledge of the many divergent fields The work became a heavy strain, and the loss of his 15 year-old son from meningitis was a blow whose effects on him were apparent to his colleagues One of them writes

Loveday s only ambition was to give to the patient of the moment the best and latest that practical pathology bacteriology and chemistry could provide it was this narrowness of output that made his reputation essentially local A real master of technique he was the originator of applied pathology in Manchester; his colleagues relied implicitly on his opinions and on his reports He created a great department and then hid himself behind it The pathological service became so good that the calls on it repeatedly overwhelmed it he satisfied the demands and then grumbled—such was his nature Intensely shy lacking in self-confidence a little querulous always hiding his light he just missed doing really great things But he did unknown good for his generation of local people.

Dr Loveday who was in his 61st year leaves a widow with a daughter and a second son.

HENRY ALLCROFT DUFFETT F R C.S Eng

Mr H A Duffett died on August 26th at Sidcup where he had spent his whole professional life Qualifying from Guy s in 1894 he held a series of resident appointments there and took his fellowship before settling in Sidcup as surgeon to the cottage hospital. In the meantime he had been a voyage on the steamship *Gaspesia* He had opportunities for surgery of which he freely availed himself and contributed notes on interesting cases to our own columns Later on he became medical officer to the Sidcup residential schools He was also certifying factory surgeon and surgeon to the R division of the Metropolitan Police

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SIR GEORGE POLLARD M.D Edin

Sir George Herbert Pollard who died at Southport on August 27th, aged nearly 73 was well known in public life Son of James Pollard of Southport, he was an Edinburgh student of singular brilliance gaining honours at the College of Surgeons in every subject of the medical curriculum After taking his medical degree in Edinburgh he stayed on to assist the professor of midwifery there and began to read for the bar Soon after settling in Southport he was called to the bar at the Inner Temple and became a justice of the peace for the borough and a member of the Lancashire county council In 1896 he was selected as mayor of Southport for Queen Victoria s diamond jubilee, and a few years later contested the or in one suffering from a psychological disturbance, although it is obvious that an unduly sensitive patient will suffer more pain An occasional case of coronary thrombosis is known to be painless, but this is a comparatively rare exception

ANGINA OF EFFORT

The history of the type of pain in angina of effort is strongly suggestive of an underlying organic lesion, for the severity and speed of onset of the pain is in all cases proportional to the amount of exertion undertaken A high proportion of patients with angina of effort suffer from pain also as a result of emotion, such as excitement, apprehension, or anger, which is the equivalent of exertion in its effect upon the heart Excitement clearly produces three definite physical changes an increase in heart rate, an increase in blood pressure, and the nervous changes resulting from an increased sympathetic tone, the latter presumably being partially an adrenaline effect In the present series of 57 cases of cardiac pain, excitement precipitated individual attacks of pain definitely in 48 cases, doubtfully in 4 cases and failed to do so in 5 cases (Table I) An important physical link is apparent here between the physical and the psychological sides It must be remembered, however, that the relationship between the extent of the lesion and the degree of pain depends also on certain other factors

TABLE I

Excitement Precipitating Individual Attacks of Cardiac Pain

Positive, 48, doubtful 4 negative, 5

DOUBTFUL

—	Physical diagnosis	Type of pain	Psychological diagnosis
1	Essential hypertension.	Spasmodic angina	Anxiety hysteria
2	Pernicious anæmia	Angina of effort	state
3	Essential hypertension Old coronary thrombosis		—
4	Mitral stenosis	innocens	Anxiety state

NEGATIVE

1	? Syphilitic	Angina of effort	—
2	Mitral stenosis	innocens	Epilepsy
3	Essential hypertension Old coronary thrombosis	of effort	—
4	—	innocens.	Epileptoid psychopathy
5	Mitral stenosis		Unclassifiable

The rapidity of development of the pain is important as is evident from the severity of the pain produced by even a small coronary thrombosis A second factor is clearly the amount of living heart muscle peripheral to a coronary lesion Dead muscle does not suffer It is possible that this may be a factor that explains the commonness of severe myocardial disease, secondary to coronary atheroma, in patients who during life had no cardiac pain Cabot (1926) found that 94 cases out of a total of 138 cases with extensive coronary disease gave no history of cardiac pain. Polanco (1936) in a recent paper, finds that only 15 per cent of 242 cases of extensive coronary disease had cardiac pain He also found however, that of the patients with cardiac pain 91 per cent had severe coronary sclerosis The deduction seems to be that although coronary disease is essential for the production of angina of effort, it is not the only factor

A third factor is that referred to above—namely, the variation in sensitivity to stimuli in different individuals Many patients suffer from angina of effort for years and appear to deteriorate in general health very slightly or not at all Apparently the coronary lesion in these cases must be slight, and these patients must be particularly reactive to a smaller lesion than would produce symptoms in others At the other end of the scale are patients whose chief symptom is dyspnœa, who are obviously suffering from a severe degree of left ventricular degeneration, and who complain of only a slight degree of angina of effort, which is definitely subsidiary to the shortness of breath

That angina of effort is founded upon an organic lesion appears not only from the cases of angina of effort in the present communication, 91 per cent of whom show definite evidence of cardiovascular disease, but from the fact that in a considerably larger series of cases, in process of publication, a similar result is found

SPASMODIC ANGINA

The type of pain found in spasmodic angina is characterised by the fact that, although the attack may be induced by exercise, emotion, or exposure to cold, it must run its course when once started, whether the initial stimulus has ceased or not In addition, these patients very often have a true angina of effort, of the classical proportional type, to a greater or lesser extent If spasm of the coronaries be postulated as the cause of the spasmodic attack of pain, the possible relationship between the psychical side of the central nervous system on the one hand and of the mechanism of the production of pain on the other, is clear

ANGINA INNOCENS

In angina innocens (Bourne 1937) palpitation undue consciousness of the heart beat, and precordial discomfort are frequent, all of these symptoms can also be felt in normal individuals as the result of severe anger, excitement, or any other intense emotion Should the central nervous system become hypersensitive, from the presence of a psychosis, it is easy to understand that these temporary physiological symptoms could be exaggerated and rendered less transitory The pain associated with mitral stenosis is almost without exception of the angina innocens type, having a more or less continuous aching character, being left-sided, not quantitative during exertion, and persisting when exertion has subsided In the present series of cases it was found that patients with mitral stenosis suffered from this type of pain only The absence of pain of a classical quantitative type, as occurs in angina of effort, is very striking The reason why patients with mitral stenosis should suffer from the angina innocens type of pain is worth further analysis It is interesting that patients with neurocirculatory asthenia, or irritable heart, have a cardiac action very similar in some respects to that found in mitral stenosis This is a truism to those who have examined any large number of normal but excitable young adults, as for example, candidates for life insurance and air pilot certificate In these normal individuals, excitement produces, temporarily, an identical type of ventricular action to that found in mitral stenosis Tachycardia is present, a slapping forcible apical impulse a loud slapping first sound, and some roughening of the latter The whole picture is so similar superficially to that of early mitral stenosis that many medical officers, previously inexperienced in the examination of this class of patient frequently make a diagnosis of mitral stenosis when no such lesion is present It is suggested that the incomplete ventricular filling per beat resulting from mitral stenosis, causes an unusually forcible ventricular systole giving rise to the slapping apical impulse and the high pitched first sound If a patient is unusually receptive to stimuli he may eventually and possibly as the result of having his attention drawn to his heart during a medical examination become abnormally heart-conscious Such a condition of heart-consciousness may become exaggerated as time goes on and may be translated into pain

TYPES OF PAIN IN CARDIAC DISEASE

It is important to realise that two distinct types of pain may be present in organic heart disease In mitral stenosis the pain is of the angina innocens type and in coronary disease of the angina of effort type It is obvious therefore that *although the psychological state of the patient may determine whether pain be present or not or the degree of such pain the type of pain must be determined by the underlying pathological lesion*

Clinical Examination

The patients examined belong to the hospital class and were both in-patients and out-patients. In none was there any evidence of cardiac decompensation The diagnosis of the type of cardiac pain was not accepted unless a full history of the symptoms had been carefully taken and confirmed Patients who did not definitely fall into one of the recognised groups were excluded from the investigation the number of these was very small In all 57 patients with cardiac pain were investigated 25 were cases of angina of effort 9 of spasmodic angina, and 23 of angina innocens In addition to these cases with cardiac pain 33 patients free from cardiac pain but suffering from organic heart disease were examined as controls. All of the patients were examined psychologically The patients examined are part of a group regularly followed up during the last eight years and each case has been sufficiently observed to make certain that the type of pain present has remained constant

METHOD

There have been two main methods of approach—the somatic and the psychological Each patient has been examined clinically and a diagnosis as to the type of pain and the physical condition has been arrived at The examination includes a full and detailed history clinical examination, six foot X ray film and electrocardiogram Each patient has also been interviewed independently by a psychologist (E W) who was not told anything about the patient from the clinical side until after he had made a psychological diagnosis In the great majority of cases the psychological interview was a single one of two to three hours in some cases a second or a third such interview took place The lines of approach were those usually employed in psychiatry The patients fell into one of the three groups—neurotic, idiopathic and anatomical Subdivisions of groups were as follows —

Neurotic Group —Anxiety state anxiety neurosis anxiety hysteria. Conversion hysteria Obsessional neurosis. Reactive depression

Idiopathic Group —Endogenous depression Epilepsy

Anatomical Group —Senile psychosis (cerebral arteriosclerosis) Mental deficiency Graves s disease &c

Well-balanced Group

In addition to an opinion as to the somatic and the psychological condition, an attempt was made to decide whether the cardiac pain was severe moderate, or mild and also whether the psychological disturbance was severe moderate or mild It was of course realised that this opinion as to the degree of the pain and of the psychological disturbance could only be a rough estimate but it can none the less be believed that the result is not grossly inaccurate

In both cardiac pain and the control groups the method of psychological interview was identical A firm attempt was made to remain unbiased It is acknowledged that this presents some difficulty owing to the fact that reference to the presenting symptom—namely that of pain if it be present, is almost inevitable in the course of such an interview It is interesting to observe that in the control group were 7 patients who showed evidence of some psychological abnormality who had no cardiac pain but who presented somatic symptoms in other areas

Before the true significance of the figures referring to the incidence of psychological abnormality in any group of individuals can be intelligently appreciated it must be remembered that such psychological abnormality can be discovered in a high percentage of the average population. This fact must be stressed in assessing the results of any investigation such as the present one As shown by Culpin (1927 1930) a routine psychological investigation of groups of workers shows after half an hour s interview or so a high percentage of individuals with some degree of minor psychosis. His figures are with regard to factory workers that 45 to 50 per cent. are normal 35 to 40 per cent show some minor psychosis and 5 to 7 per cent are psychoneurotics He found further that factory workers did not differ greatly with regard to symptoms from the clerical workers that such differences as did appear showed the factory workers to be rather less stable than the clerical workers He found also in authorities —i e persons who had risen as a result of greater intellectual ability to positions of responsibility—only about 30 per cent. of abnormality

Results

It was found that the patients with organic heart disease but without cardiac pain fall into somewhat earlier age-groups than those who suffer from the symptom of pain There were twice as many Jews in the cardiac pain group 9 being present among 57 patients with pain and 2 in the control group of 33 patients without pain

The sexes are represented in about an equal frequency in the two groups, there being 37 men and 20 women in the pain group and 19 men and 14 women in the control group The sex incidence of the figures is not susceptible of any very definite conclusions The considerable preponderance of males is due to the fact that 20 out of 25 cases of angina of effort were in men. In spasmodic angina 8 out of 9 of the cases were in men but on the other hand 15 out of 23 of the patients with angina innocens were women. The position in the family is somewhat interesting as the first and last or only children are usually thought to be more prone to develop psychoneurotic symptoms. In the present series patients who came first or last in the family or who were single children showed a slightly higher percentage incidence as regards cardiac pain; the cases in these family positions amounted to 54 per cent. of the cardiac pain patients On the other hand 42 per cent of the cases without cardiac pain occupied this position in the family No reasonable deductions can be drawn from the occupational statistics which emerge in the course of the present investigation, for many of the control cases were collected from a poorer class of the population as regards standard of life

Heredity and environment appear to be to some extent causative factors, as is shown in Table II

TABLE II

Effect of Heredity and Environment

Cardiac pain	Probable	Possible	None	Un known
With	29 (51%)	8 (14%)	18 (32%)	2
Without	8 (24%)	8 (24%)	14 (42%)	3

Probable (*near relative*) —'Insane, 'depressed "suffered from spells of depression,' suffered from anxiety spells 'took to drink, drinker' 'heavy drinker' 'drunkard' 'of a worrying nature,' hysterical' 'highly strung' nervous nervy,' jumpy" "tics'

Possible —'Flares up irritable, "excitable' "quick tempered" 'worries a lot' reserved'

None —No mental abnormalities in the family

Unknown —Illegitimate birth, father died before birth father or mother died within the first two or three years of the patient s life

As it is impossible to separate these two, their combined relation to the incidence of psychoneurosis is shown together

The most striking result of the investigation is seen in the fact that whereas 8 out of 57 patients with cardiac pain are "well balanced" psychologically, 21 out of 33 are "well balanced" in the control group of patients with organic heart disease, but without pain The details are given in Tables III, IV, and V

TABLE III

Psychological Abnormalities and Types of Cardiac Pain

—	With pain				With out pain
	Angina of effort	Angina inno cens	Spas modic angina	Total	
Anxiety neurosis	4	11	1	16	2
hysteria	6	3	2	11	2
Conversion hysteria	1	2	2	5	2
Obsessional neurosis	—	—	2	2	—
Depression—					
Reactive	3	1	—	4	1
Endogenous	1	—	1	2	—
Schizophrenia	—	1	—	1	—
Epilepsy	—	3	—	3	—
Mental deficiency	—	—	—	—	1
Senile psychosis	4	—	1	5	2
Well balanced	6	2(?)	—	8	22
Emotional— (Graves s disease)	—	—	—	—	1

If the incidence of psychological abnormalities in the three main types of chronic cardiac pain are further analysed, it is seen that the incidence is definitely lower in the *angina of effort* group than in the spasmodic angina or the angina innocens group This is a finding that might have been expected from the quantitative organic character of the pain

Of these patients 30 per cent. are psychologically normal The results in the cases with *spasmodic angina* show that the psychological abnormalities are present to a degree of 100 per cent In most cases the abnormality was pronounced The patients with *angina innocens* also provided a very striking picture The results are shown in Table III, where it is seen that all but 2 of such patients were definitely abnormal psychologically Of these 2 patients one was stated (E W) probably to be suffering from some such abnormality, which, however, was too deeply hidden to be easily unearthed without further interview The second case was a woman who seemed to have an unduly anxious and sensitive mentality, but in whom one interview failed to elicit a psychological diagnosis Contrasting the results it is interesting to see that the incidence of psychological disorders is fairly evenly distributed in the patients with angina of effort, but in the case of those with angina innocens, anxiety states are present in a very high percentage

TABLE IV

Incidence of Pain in Psychological Groups

	With cardiac pain	Without cardiac pain
Neurotic group	38	6
Idiopathic group	6	1
Anatomical group	5	4
Well balanced	8	22

Control cases —Table III also contrasts the cases with pain with those without, in terms of the various psychological abnormalities It is seen that 23 out of 33 of the control cases had no psychological disturbance Table IV shows also the incidence of pain in the four main psychological groups

TABLE V

—	Angina of effort	Spasmodic angina	Angina innocens	No pain
Total	25	9	23	33
Psychological disturbance	19 (76%)	9 (100%)	21 (90%)	11 (33%)
Increase above normal	(31%)	(55%)	(45%)	No increase.

RELATIONSHIP BETWEEN THE DEGREE OF PSYCHOLOGICAL DISTURBANCE AND OF THE CARDIAC PAIN

An attempt was made to correlate the type of pain with the type of psychological abnormality in terms of degree In the charts the degree of pain as estimated by G B and R B S was plotted on the ordinates and the degree of psychological disturbance as estimated by E W on the abscissæ

It will be seen from the Figure that in angina of effort in only 2 cases is the pain proportionately of a higher grade than the mental disturbance In angina innocens this predominance of the mental disturbance over the pain in terms of severity is even more pronounced In spasmodic angina the opposite is seen, for here the degree of pain is definitely more severe than is the degree of mental disturbance

These charts seem to be open to the interpretation that in both angina of effort and in angina innocens the severity of the mental disturbance was a factor in the production of the pain, and that in the case of spasmodic angina the severe pain might, as regards its production, be independent of the mental disturbance

SUSCEPTIBILITY OF CARDIAC PAIN PATIENTS TO PAIN ELSEWHERE

If dysmenorrhœa can be taken as a type of pain which is suffered from in proportion to the predisposition of individuals to suffer from pain, it is interesting to observe the incidence of this symptom in patients with cardiac pain.

Of the 13 control cases the percentage complaining of dysmenorrhœa was 15, in all of these control cases the presence and severity of this symptom was inquired into Of the patients with cardiac pain the symptom was definitely inquired about in 21 cases and was present in 57 per cent In the remaining cases with cardiac pain dysmenorrhœa was not mentioned by the patient but was not explicitly sought for

If it be assumed that the symptom was absent in this latter sub-group it is still seen that the incidence of dysmenorrhœa is higher by 36 per cent in the cardiac pain cases

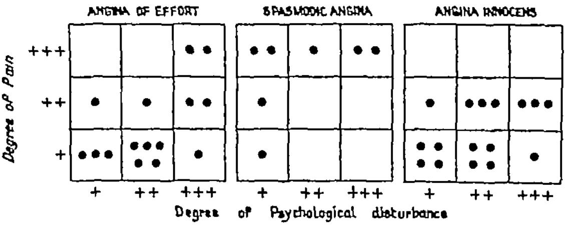
HEREDITY AND ENVIRONMENT

The effect of heredity and early environment on the ultimate frequency of cardiac pain later in life is seen in Table II In patients without cardiac pain in normal family history was nearly twice as common

Discussion

The results of the investigation indicate that psychological abnormality occurs in a definitely higher percentage in cardiac pain patients than in control cases It would appear logical to assume that the patient's psychological make-up is one of the factors responsible for the production of cardiac pain in predisposed individuals This is further suggested by the fact to be dealt with in greater detail in Dr Wittkower's paper that the onset of cardiac pain in many cases is simultaneous with the occurrence of some severe psychological disturbance

That the psychological factor is by no means the only one and, indeed that it is sometimes a subsidiary or negligible one is proved by the following cases



Two patients in the present series suffered with angina of effort one was found to have an anxiety state and one a considerable degree of hysteria. They both had a mild myxœdema which responded to thyroid extract In both the cardiac pain disappeared A third patient diagnosed anxiety state had an angina of effort and pernicious anæmia with the symptomatic cure of his anæmia his angina of effort has practically disappeared In a fourth patient a condition of anxiety hysteria was present; he had suffered from no cardiac pain until he developed a coronary thrombosis The cardiac pain disappeared after this and on his recovery did not recur

These cases prove definitely that in patients with an abnormal psychology cardiac pain may owe its presence to physical factors; for the removal of or the disappearance of these physical factors is followed by the disappearance of the pain although the abnormal psychological condition persists

It is only logical to assume that the same may be true of cardiac pain patients in whom there is a physical factor such as coronary atheroma which cannot be removed In these patients also even if an abnormal psychological state is present it must not be assumed that the latter is necessarily the cause of the presence of the anginal pain

Four divisions can thus be made of cardiac pain patients according to the underlying psychological state.

(1) Well balanced persons where the pain is entirely of organic origin.

(2) Neurotics, in whom the pain is entirely of organic origin.

(3) Neurotics in whom the pain may be superimposed on an organic cardiac disorder

(4) Neurotics, where the pain may be entirely of psychogenic origin, the organic state being apparently normal

Definite proof of the essential psychogenic origin of cardiac pain can only be obtained in any particular case by determining, first that the origin of the pain was associated with some definite psychological state and that the recrudescence of the pain was associated with a similar psychological crisis or state It is not sufficient to demonstrate that cardiac pain disappears as the result of psychological treatment, for such treatment may enable the patient to repress a pain which originally had an organic basis

Conclusions

We have examined from the physical and psychological points of view 57 cases with cardiac pain and 33 cases with organic disease without pain Evidence of some psychological abnormality was shown in 19 (76 per cent) out of 25 cases of angina of effort; in 9 (100 per cent.) out of 9 cases of spasmodic angina of effort in 21 (90 per cent) of 23 cases of angina innocens and 11 (33 per cent.) out of 23 patients without pain If allowance is made for the normal incidence of psychological disturbance in the population according to Culpin's figures the increase of psychological disturbance above normal in the various types is as follows: In angina of effort 31 per cent in spasmodic angina 55 per cent in angina innocens 45 per cent and in the cases without pain no increase (Table V).

It is clear that there is a higher *percentage* of psychoneurotic disturbance in cardiac pain patients than in patients with cardiac disease but without pain Angina of effort is not associated with any particular form of psychological disturbance but the incidence of anxiety state and anxiety hysteria is unduly high in angina innocens

The milder types of cardiac pain, angina of effort and angina innocens appear to be to some extent due to the presence in the patient of a psychoneurotic disturbance Although the same fact may be true of the patients with spasmodic angina it is suggested that the severity of the pain may itself be a causative factor in the production of a psychoneurotic state

The possible psychological mechanism by which the cardiac pain may be produced by the psychological state will be fully discussed in a subsequent paper

In this communication E W is responsible for the diagnosis of the psychological condition present in the patients For the clinical deductions *from* the facts available G B and R. B S take the chief responsibility though E W also helped in this part of the investigation

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A STUDY OF THE ANATOMY OF VERTEBRAL THROMBOSIS

WITH REPORTS ON TWO CASES

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THE two following patients with the retro olivary syndrome are of particular interest because in each case the symptomatology had clearly indicated an occlusion confined to the posterior inferior cerebellar artery, and yet post mortem examination showed thrombosis of the entire vertebral artery That such an extensive occlusion may occur without comparable clinical findings is a known fact, but the explanation for this is not always apparent The following case reports illustrate very precisely the two main reasons, the one anatomical and the other pathological, for this apparent discrepancy

Such clear cut infarctions of the brain stem, when combined with full clinical records, serve yet a further purpose, for they are invaluable aids to the study of structure and function in man From the types of dissociation of sensory disturbance in the face which occurred in patients suffering from this syndrome, Gerard (1923) and Stopford (1925) were able to deduce that the central arrangement of the divisions of the trigeminal nerve within the brain stem is the reverse of the peripheral It is certain that similar careful analyses of other clinical findings in these patients will lead to a fuller knowledge of the anatomy of the nerve tracts in the medulla and pons

There is always, for example, a dissociated sensory disturbance in the contralateral side of the body owing to involvement of the spinothalamic tract, but, curiously, certain of the patients have revealed sparing of the cervical region, and in some rare instances of the thoracic region also From such clinical observations it is possible to deduce that the fibres in the spinothalamic tract are laminated A disturbance of sensation in the contralateral side of the face suggests a similar lamination in the quinto thalamic tract, the central pathway from the spinal nucleus of the trigeminal up to the thalamus Furthermore, there is the occurrence of an ipsilateral Horner's syndrome in a large percentage of examples of occlusion of the vertebral and its branches, indicating an interruption of descending sympathetic tracts within the brain stem Unfortunately, the present knowledge of the central pathways of the sympathetic is very meagre and rests largely on data gathered from animal experimentation In the light of the clinical material presented here, how far can one extend and apply this knowledge to man ?

The earliest descriptions of the retro olivary syndrome were made by Taylor (1871), Senator (1881, 1883), Wallenburg (1895), and Hun (1897), and the examples reported up to 1923 have been reviewed by Gerard (1923) and Stopford (1925) Since that date 24 cases, including the present two, have been reported, as shown in the Table

Summary of Case Reports of Retro olivary Syndrome

—	Cases	Post mortem
Ramsbottom and Stopford (1924)	1	No
Richter (1924)	1	Yes
Foix Hillemand, and Schalit (1925)	1	Yes
Winther (1927)	1	Yes
Wilson and Winkelman (1927)	1 1	No Yes
Thompson (1929)	4	No
Merritt and Finland (1930)	1 5	Yes No
Anderson, Lockhart and Souter (1931)	1	Yes
Hall and Eaves (1934)	1	Yes
Diggle and Stopford (1935)	1	Yes
Goodhart and Davison (1936)	3	Yes
Sheehan and Smyth (1937)	2	Yes
Total	24	13

Sex	16 male 8 female
Average age	59¼ (between 28 and 70 years)
Side	13 left 11 right

Of these, only 13 came to autopsy and were studied histologically but both verified and unverified examples have been included in the Table, for it must always happen that where death supervenes rapidly, the patients will rarely have been so carefully examined as those that recover Indeed, in many instances, a proper sensory examination is all but impossible

FIRST CASE

A warehouseman aged 55, married, was admitted as an urgency into the Manchester Royal Infirmary on June 5th, 1935 He complained of weakness of the left arm and that he was unable to swallow The symptoms had developed in the following manner He was in his usual state of health until 7 30 A M on June 4th, 1935, when he was suddenly seized with a sensation of pins and needles down the right side of his body and almost at the same moment he noticed that he was unable to swallow his saliva His left arm became weak. He was perfectly certain that at no time was there the least impairment of consciousness He remained in this state until his admission into hospital at 8 30 P M on June 5th under the care of Dr A H Holmes

Previous history—In June, 1933, he first became aware of undue breathlessness on exertion, and in February, 1934, he was admitted to the infirmary under the care of Dr Crighton Bramwell for investigation The clinical picture was one of cardiovascular degeneration Between his discharge from hospital in February, 1934, and his readmission on June 5th, 1935, his general condition remained stationary

General examination (on readmission) —No characteristic attitude was adopted The patient lay in dorsal decubitus The breathing was shallow and much impeded by mucus and saliva which he was unable to expectorate Cardiovascular system pulse strong and regular, the rate 88 the blood pressure was 130/90 mm Hg , there was no sign of cardiac muscle failure Respiratory system there were numerous râles at the lung bases

Examination of nervous system—Cranial nerves the left pupil was smaller than the right and the left palpebral fissure was narrowed The optic nerve heads were normal, and there were no retinal changes The fields of vision were full by the confrontation test The ocular movements were full but coarse nystagmus was elicited on the

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patient looking to the right and slight nystagmus on looking to the left There was no sensory loss whatever over the face but loss of common sensation on the left side of the tongue almost to the midline As far as could be ascertained the appreciation of taste was intact on both sides of the tongue Hearing was intact and there was no weakness in the facial or masticatory muscles The left palate was immobile and the uvula was drawn over to the right side There was complete aphonia but no aphasia The 11th and 12th cranial nerves were unaffected

Motor system Except for a relative weakness of the left arm and leg there was no paralysis anywhere The tendon jerks were all present and equal. The plantar responses were both flexor There was considerable hypotonicity of the left arm and leg as compared with the right

Sensation: There was complete analgesia down the right half of the body with the exception of the area of supply of the 5th cranial nerve In this analgesic area light touch was immediately appreciated

Coördination: There was gross incoördination of the left arm and leg In performing the finger nose test the patient was fully 2 feet wide of the mark the deviation being always towards the patient's left side

Clinical diagnosis.—Posterior inferior cerebellar thrombosis.

Progress—On the morning after admission the patient's condition had greatly deteriorated Cyanosis was pronounced and the breathing was greatly embarrassed by the accumulation of secretions He lingered throughout the day and died at 6 o'clock the same evening 36 hours after the onset of symptoms.

Post mortem examination (June 7th Dr W Susman)—The brain was congested throughout The left vertebral artery was thrombosed with firm ante mortem clot from the point where it passed on to the ventral aspect of the medulla to the point of fusion at the basilar artery The clot extended into the left posterior inferior cerebellar artery for a considerable distance but 2 c.cm before this vessel penetrated the inferior surface of the cerebellum the lumen of the artery was patent The left anterior spinal was unaffected The left posterior spinal could not be identified The right vertebral and basilar arteries were healthy The heart was enlarged and there were fatty changes but no evidence of valvular disease The aorta revealed no serious atheromatous changes The lungs showed hypostatic pneumonia

Histology—Sections were made at all levels of the medulla oblongata and stained with hæmalum and eosin Nissl and the Loyez method for myelin sheaths As death occurred within 36 hours of the onset of symptoms no tract degeneration studies were possible In sections through the lower part of the medulla the lesion is not visible At the level of the sensory decussation the area of infarction appears on the left side and is restricted to the dorsal aspects of the medulla involving the nucleus and fasciculus cuneatus and the nucleus gracilis Sections through the lower part of the inferior olivary body (Fig 1) show the lesion to occupy the entire dorsolateral aspects of the medulla but leaving the mesial and ventral aspects intact In a ventral direction it extends to involve the dorsal half of the olive and its connexions Dorsally the ventral part of the restiform body and the nucleus ambiguus are implicated but the nucleus solitarius and the descending tract of the vestibular nerve have escaped Laterally there is a thin rim of brain tissue forming the outer wall for the lesion and in this area most of the nerve-fibres show signs of degeneration and there is much vacuolation. The spinal nucleus and tract which lie within the zone of infarction are considerably altered the cells having undergone severe chromatolysis, and many of the nuclei are excentrically placed The emerging and entering fibres of the vagus nerve lie in the centre of the lesion Mesially, the pyramidal tract, mesial fillet posterior longitudinal bundle hypoglossal and dorsal vagal nuclei are intact. In the mid-olivary sections the infarcted area is diminished in size and is confined to the central part of the medulla lying immediately dorsal to the olive It involves the nucleus ambiguus and the emerging and entering fibres of the vagus only leaving the spinal nucleus and tract of the 5th nerve the spinocerebellar tracts and the restiform body intact At the most oral limit of the medulla at the entrance of the 8th cranial nerve the lesion has entirely disappeared

This case is of particular interest because it reveals an anatomical vertebral distribution of extremely limited extent It is probable that collateral circulation at the periphery of the lesion accounted partly for this but the collateral circulation between the branches of the vertebrals and basilar is very small indeed Now according to Stopford (1916 1917) the cephalic end of the medulla is supplied by bulbar branches from the vertebral but in 19 per cent of cases there is a low junction of the two vertebrals, and the basilar instead of the vertebral supplies the most central parts of the medulla at this level—namely the pyramid mesial fillet and hypoglossal nucleus Such a low junction of the two vessels was present in this first case reported here The basilar artery was formed by the junction of the two vessels at the level of the middle of the olive The report serves therefore as a clinical example of the occasional limited anatomical distribution of the vertebral artery and it emphasises again the importance of recalling the anatomical variations in the bulbar distribution of the vertebral artery and its branches

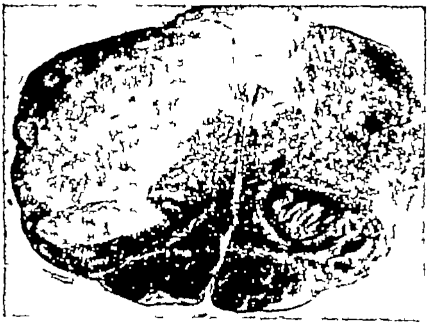

FIG 1—Section through the lower olivary region of the medulla of Case 1 showing the greatest extent of the lesion.

Of the 24 recorded examples since 1923 16 showed a Horner's syndrome in the ipsilateral eye, and this was well demonstrated in the above report. The myosis is apparently the most frequent sign, ptosis is less often seen and enophthalmos the least There is never any indication of Horner's syndrome on the opposite side. Other signs of sympathetic palsy which have occasionally been observed are vaso dilatation and the absence of sweating of the skin on the ipsilateral side of the body Many observers have indicated the presence of the latter by reporting excessive sweating on the contralateral side of the body a recognised compensatory mechanism.

The ipsilateral type of sympathetic palsy proves to be very significant in the consideration of the central pathways for the sympathetic. It is clear at once that these pathways do not cross below the level of the pons Furthermore, it appears that the central sympathetic pathways lie dorsolateral in the medulla, probably close and medial to the spinothalamic tract

Russel (1931) has reported a case of infarction in the upper part of the pons and lower levels of the mid brain. The lesion which was left sided, involved the superior cerebellar peduncle and extended ventrally to implicate the spinothalamic tract, but the central grey matter around the upper part of the 4th ventricle and the nucleus and fibres of the third nerve remained intact, yet there was evidence of a left Horner's syndrome The findings in this patient indicate that the central sympathetic pathways for the eye do not cross below the upper level of the mid-brain in man This is in disagreement with the experimental results (Karplus and Kriedl 1909, 1910, 1911), which suggest that a sympathetic pathway arising in the frontal cortex relays in the hypothalamus and passes down the ipsilateral side of the brain stem, crossing only in the first thoracic level of the cord

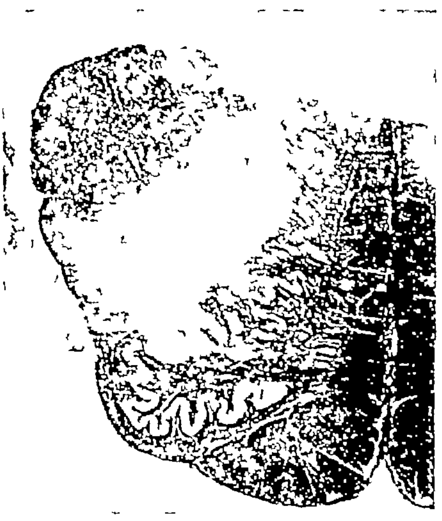

FIG 2 —Section through the mid-olivary region of the medulla of Case 2 showing the greatest extent of the lesion

SECOND CASE

A grocer aged 43, single, awoke at 7 o'clock on the morning of Nov 27th, 1936, to find himself totally unable to swallow He vomited almost immediately and he noticed that he could only speak in a whisper He did not remain in bed but found difficulty in standing because of dizziness This feeling of unsteadiness, he said, entirely disappeared if he lay still, but movement of any kind brought it on During the course of the day he became aware that the right side of his body was numb He volunteered the information that he could burn his fingers with a cigarette without causing any pain At the same time he noticed that the left side of his face above the eye felt quite numb His sister, who lived with him and who was an unusually observant witness, had actually tested these complaints herself, and had found that over these areas he could neither feel pain nor tell the difference between hot and cold

The patient's symptoms abated somewhat during the succeeding 24 hours, but on Nov 30th his left eye became inflamed and he was admitted to the Manchester Royal Eye Hospital He seemed to be progressing favourably until Dec 13th when the left side of his face became suddenly paralysed and his difficulty in swallowing became very severe Liquids gave him particular trouble On Dec 14th he was transferred to the Manchester Royal Infirmary under the care of Dr Holmes

Previous history —The patient had enjoyed good health up to a year previous but latterly he noticed that he was becoming unduly tired and irritable, and suffered from occasional temporary diplopia

General examination (on admission Dec 15th) —A heavily built man, intelligent and perfectly orientated in time and space but in great distress from his inability to swallow or cough He did not adopt any characteristic position He had complete aphonia Temperature 99 5° F Cardiovascular system pulse strong and regular, rate 104, the blood pressure was 170/120 mm Hg , heart clinically enlarged, no signs of cardiac muscle failure Respiratory system lungs healthy , respirations 32

Examination of nervous system —Cranial nerves There was no anosmia The right fundus oculi was normal, no papillœdema It was impossible to examine the left eye as he had a severe suppurative keratitis with great chemosis, and œdema of the eyelids The external ocular movements were full There was slight nystagmus on looking to the right The reactions of the right pupil were quite normal There was complete anæsthesia on the left side of the face to all forms of sensation over the area of supply of the first division and hypalgesia over the area of supply of the second division of the trigeminal nerve There was a complete facial paralysis on the left side Hearing was normal on both sides It was very difficult to be certain of the sense of taste but it appeared to be very deficient on the left side of the tongue On attempting to phonate, the palate was drawn over to the right side The 11th and 12th cranial nerves were unaffected

Motor system The power on the right side of the body seemed quite normal On the left side there was greatly diminished power in both limbs There was marked hypotonia of the upper and lower extremities on the left side All the tendon reflexes in the arm were diminished on the left side as compared with the right The knee and ankle jerks were present and equal on both sides The plantar response was flexor on the right, extensor on the left There was a tendency to ankle clonus on the left side The superficial abdominal reflexes were present on both sides but much brisker on the right side

Sensation There was total analgesia on the right side of the body with the conspicuous exception of the area supplied by the cervical plexus In the analgesic area there was definite impairment of temperature discrimination but light touch and vibration were correctly appreciated

Coördination There was gross ataxia of the left arm and leg

Clinical diagnosis —Posterior inferior cerebellar thrombosis

Progress —On the day after admission there was a sudden increase in the paresis on the left side of the body and the patient became drowsy On the following day he had lapsed into coma but could still move the right arm and leg Temperature 103° F , pulse rate 112, respirations 36 The depth of the coma increased and he died at 10 P M on Dec 18th, 22 days after the onset of the symptoms

Post mortem examination (Dec 19th, Dr Susman) —The brain showed slight thinning of the convolutions The arteries of the circle of Willis showed very considerable atheroma Both vertebral arteries were thrombosed, containing large firm clots The heart showed some hypertrophy and dilatation A considerable degree of patchy fibrosis was present in the myocardium The coronary arteries showed considerable atheroma throughout their length The lungs contained many bronchopneumonic patches The kidneys were both enlarged, and their surfaces were studded with cysts 3 mm to 3 cm in diameter On section large areas of cortex were completely destroyed by the cyst formation

Histology —Sections were made at all levels of the medulla oblongata and pons and stained by the Weigert Pal and Marchi technique The Marchi preparations, probably owing to faulty technique, failed to show any tract degeneration in spite of the three weeks' history of the illness The Weigert-Pal preparations, however, enabled the area of infarction to be delimited accurately In sections through the motor and sensory decussations in the medulla no lesion is visible Immediately above the sensory decussations a sharply demarcated area of infarction appears on the left side It is a small wedge shaped lesion with its base at the periphery and the apex extending inwards between the inferior olive ventrally and the spinal nucleus of the 5th nerve dorsally It involves the spinothalamic, rubrospinal, and ventral spinocerebellar tracts completely The olive and spinal nucleus of the 5th nerve are spared at this level. At a slightly higher level, in sections through the emerging vagal fibres, the infarcted area is much larger, extending ventrally to involve part of the inferior olive, dorsally to involve the spinal nucleus and tract of the 5th nerve and inwards to include the nucleus ambiguus and part of the nucleus solitarius The emerging and entering fibres of the vagus nerve lie in the centre of the lesion. Mesially the pyramidal tract mesial fillet posterior longitudinal bundle hypoglossal and dorsal vagal nuclei are intact (Fig 2) In sections through the upper part of the medulla at the entrance of the 8th cranial nerve the lesion becomes small again and finally disappears before the commencement of the pons In none of the sections of the medulla or pons is there any lesion visible on the right side

This is unquestionably an example of a spreading lesion thrombosis starting in the posterior inferior cerebellar artery spreading to the vertebral and later to the other vertebral. The post mortem findings show only the result of the primary obstruction to the posterior inferior cerebellar vessel. This happens frequently in such cases and explains many of the confusing reports that reveal otherwise inexplicable discrepancy between the clinical signs and the post mortem findings The clinical history of this case bears out this suggestion and it is true of a large majority of cases in which the onset is sudden usually without loss of consciousness but there follows a period during which there is a slow but steady increase in the number and severity of the symptoms

DISTRIBUTION OF ANÆSTHESIA

There are two points of special interest in the sensory loss of Case 2 firstly the complete anæsthesia on the left side of the face over the area of supply of the first division of the trigeminal, with more or less sparing of the maxillary and mandibular divisions and secondly absence of any sensory impairment in the area supplied by the cervical plexus on the right side of the body

The impairment of sensation in the 24 recorded examples of retro-olivary syndrome since 1923 have been grouped as follows in the manner suggested by Stopford (1925) —

GROUP 1: *Pain and temperature impairment in ipsilateral side of the face* —Ramsbottom and Stopford (1924) Richter (1924) Winther (1927) Wilson and Winkelman (1927) (Case 2); Thompson (1929) (Cases 1–4) Merritt and Finland (1930) (Cases 1–3); Goodhart and Davison (1936) (Case 1); Sheehan and Smyth (1937) (Case 2)

GROUP 2: *Pain and temperature impairment in contralateral side of the face* —Hall and Eaves (1934)

GROUP 3: *Pain and temperature impairment in both sides of face* —Merritt and Finland (1930) (Cases 5 and 6); Goodhart and Davison (1936) (Case 2)

The remainder presented no sensory impairment in the face.

It will be seen that the great majority showed impairment or loss of sensibility over the ipsilateral trigeminal area Rarely was sensibility disturbed on the opposite side of the face. The explanation is clearly that the quintothalamic tract lies deeper and is therefore more often spared than the spinal nucleus and tract of the 5th nerve which is placed more peripherally (Stopford 1925) This is to be expected from the wedge-shaped appearance of the lesion, projecting inwards from the surface of the medulla. In 7 instances no sensory loss was found in the area of distribution of either trigeminal for in some instances the spinal nucleus and tract of the 5th nerve lie outside the area supplied by the posterior inferior cerebellar artery (Stopford 1925) It is necessary to emphasise however that more patients would probably show some slight impairment of sensation if a complete sensory examination were always possible for it is essential that the sensation on each side of the face be compared carefully with that in the arm and leg of the same side as the lesion for it is only in these latter parts that it is fair to assume that the sensation is normal for the particular individual under observation

Now in Case 2 reported here and in 3 other examples of the series the impairment of sensation on the face was confined to the two upper divisions of the trigeminal and the first division was usually more deeply affected than the second As it is the cephalic extremity of the spinal nucleus and tract of the 5th nerve that frequently escapes after occlusion of the posterior inferior cerebellar artery these cases add further confirmation to the view expressed by Gerard (1923) and Stopford (1925) that the central arrangement of the three divisions of the trigeminal nerve is the reverse of the peripheral There is no support for the opposing theory as enunciated by Woods (1913), of a segmental distribution of the spinal root nucleus so that each level of the nucleus passing orally receives fibres from a concentric band of skin nearer to the mouth Indeed this theory has been founded largely on the clinical findings in patients suffering from syringobulbia many of which have not been verified histologically and where this has been done a cavity has been found often very irregular in shape and interrupted by bridges of normal tissue and the evidence is hardly admissible

The sparing from sensory loss over the cervical region on the contralateral side of the body has been previously noted by Thompson (1929) and in the patient of Anderson Lockhart and Souter (1931) the impairment in sensation on the contralateral side extended up only as far as the umbilicus. No interpretation which is based on a gradual crossing of the fibres from the cervical region will explain this additional sparing in the thoracic region Sparing sometimes in the cervical and occasionally in the thoracic region also can only be explained by a lamination of the fibres in the spinothalamic tract those from the leg area lying most superficially, those from the trunk and arm at a deeper plane and those from the cervical region deepest of all. Such an arrangement in the cord is supported by all the evidence gathered from the results of chordotomy and it seems to hold for the termination of the fibres in the ventral nucleus of the thalamus It is reasonable therefore to presume its existence in the medulla A lesion extending from the periphery inwards to a variable extent would result in involvement of the superficial fibres of the spinothalamic tract in almost all cases, the deepest fibres less often hence the sparing of the cervical region and occasionally of the thoracic region.

It is possible to argue from the two instances reported by Müller (1906) in both of which the responses to pain and temperature were completely lost in the *contralateral* side over the upper division of the trigeminal whilst in the maxillary and mandibular divisions these sensations were only slightly impaired that there exists a similar lamination of the fibres in the quintothalamic tract Thus the fibres from the lower part of the spinal nucleus of the 5th nerve (related to the ophthalmic division of the trigeminal) would be the most superficially placed the fibres from the middle part of the nucleus (related to the maxillary division of the 5th nerve) on a deeper plane and the fibres from the upper part of the nucleus (related to the mandibular division of the 5th) occupying a still deeper position Such an arrangement is indicated in the first figure of Stopford's paper (1925) and is represented diagrammatically here in Fig 3, in connexion with a similar lamination of the spinothalamic tracts

In the patient of Hall and Eaves (1934), on the contralateral side, the lower divisions of the trigeminal were involved to a greater extent than the upper division It is the only instance of such an arrangement, which would be opposed to a lamination of the quintothalamic tract as assumed above From the report, however, the lesion appears to have been unusual in shape and to have extended upwards into the pons Below, it divided into two discrete areas of infarction, one of which was small and rather more centrally placed, producing slight involvement of the mesial fillet, as revealed by impairment of stereognosis in the right hand and slight impairment of the sense of position in the right foot A centrally placed lesion such as this might readily implicate only the deeper lying fibres in the quintothalamic tract and thus account for the unusual distribution of sensory impairment in the face

Schema of Lamination of Fibres for Pain and Temperature Impulses in the Spinothalamic and Quintothalamic Tracts

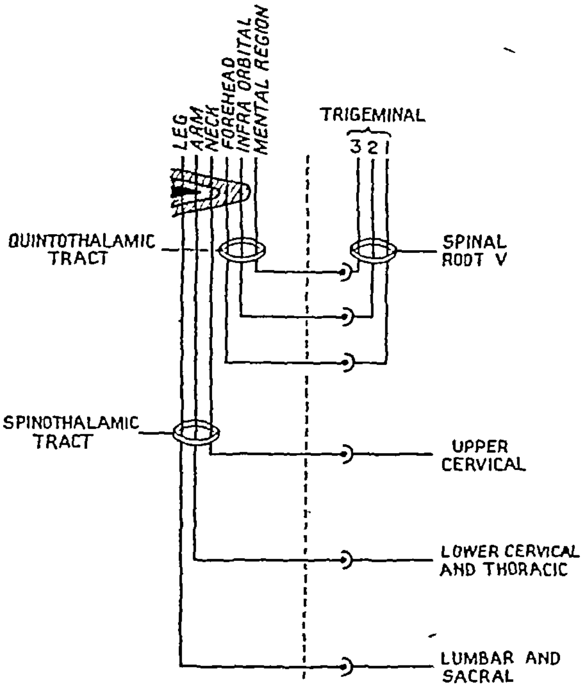

FIG 3 —A wedge shaped lesion in the medulla (shown diagrammatically) may thus involve only the leg trunk and arm areas or project further inwards to implicate successively the neck forehead infra orbital and mental regions

In 7 of the instances reviewed here there was evidence that light touch had also been affected in the area of supply of the trigeminal, although it was never completely lost as were the modalities of pain and temperature Such an impairment of tactile sensibility was revealed in the ophthalmic division in Case 2 of the present report In the review by Stopford (1925) it was pointed out that in most of these *cases the lesion has extended into the pons,* as deduced from the concomitant facial palsy The chief sensory nucleus of the 5th nerve in the pons might be implicated and account for the impairment of tactile sensibility From such examples, therefore, it would be impossible to deduce anything definite in regard to any possible pathways for the recognition of light touch via the spinal nucleus of the 5th. On these grounds, Case 2 of the present report and the instances of Merritt and Finland (1930) and of Goodhart and Davison (1936), which all showed some involvement of tactile sensibility in the face, must be excluded as inconclusive Two reports in the present series, those of Richter (1924) and Winther (1927), stand out in contrast however In both of these the lesion was confined to the posterior inferior cerebellar artery (they were both examples of embolus) and autopsy showed no pontine lesion whatever Yet in both, tactile sensibility was impaired in the ipsilateral trigeminal supply There is some positive evidence therefore that fibres conveying tactile sensation descend in the spinal tract of the 5th nerve but for a shorter course than those for pain and temperature Such an arrangement would offer an explanation for the impairment in tactile sensibility confined often to the first and sometimes to the second division of the 5th when pain and temperature sensibilities are lost over the entire trigeminal supply Windle (1926) has offered some anatomical evidence in support of such an arrangement

Before concluding, special mention must be made of the paper by Foix, Hillemand, and Schalit (1925) They believe that many of the reported examples of posterior inferior cerebellar syndrome are due in fact to occlusion of the " artery of the lateral sulcus of the medulla " It seems certain that the artery referred to by them is one of the larger of the branches described by Stopford as arising near the origin of the basilar, or commonly from the anterior inferior cerebellar and distributed *occasionally to the upper* levels of the retro olivary region of the medulla Their report does serve, however, to emphasise the difficulty of recognising clinically an occlusion limited to the posterior inferior cerebellar artery The distinction between occlusion of the posterior inferior cerebellar (Wallenburg's syndrome) and that of the vertebral artery (Babinski Nageotte syndrome) is not an easy one Where there are additional signs of pyramidal involvement the diagnosis is certainly vertebral, but the absence of such evidence is no indication that the occlusion is confined to the posterior inferior cerebellar vessel. On account of this difficulty, no sharp line of demarcation has been drawn between these two conditions in the present series

Our thanks are due to Prof J S B Stopford for many valuable suggestions

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BULGARIAN TREATMENT OF POST-ENCEPHALITIC PARKINSONISM

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L R C P Edin
AND
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The treatment of post-encephalitic parkinsonism described as the Bulgarian method is not generally known in Great Britain nor as far as we have been able to ascertain has anything been published here or in America. Yet it is being used on the Continent and especially in Italy, on a national scale. As recently as August 1937 a hospital in Germany has been opened to serve exclusively as a centre for this treatment. In Austria France and Belgium the method is followed with considerable interest.

In the last two years it has seemed of growing importance for us to investigate the numerous reports published on the Continent. In March 1934 at the Société Médicale des Hôpitaux it was stated that the Roemer or Kleemann high-atropine method was the best treatment of post-encephalitic disturbances whereas later Panegrossi (1935) in Rome became assured that the Bulgarian treatment as perfected and organised in Italy had a definite advantage over the high-dose atropine method.

The history of this empirical treatment is connected with a hitherto obscure apothecary Ivan Raeff, living in a small Bulgarian village. By his activity it has spread from its native Bulgaria to other countries and finally by the efforts and the bounty of the Queen of Italy the Italian medical schools began to investigate its value. Its administration slowly lost the original form various workers having reduced it to a scientific basis.

PHARMACOLOGY

Examinations by di Mattei (1935) of Pavia and Tocco (1936) of Messina proved that the basis of the treatment is a belladonna root very different, however morphologically from other belladonna roots. Panegrossi described it as a root of the solanaceae (mainly belladonna) from Bulgaria.

The fact is well known that the alkaloids of the solanaceæ group exert a very favourable influence and in some cases cause a dramatic recovery in patients suffering from post-encephalitic parkinsonism.

In comparing the results of the Bulgarian treatment with those obtained for instance by Roemer (1932a) or by Marinesco and Façon (1933) it may appear on the surface that there is not much difference as regards the drug and the results obtained. One may also bear in mind the experiences with the high dose atropine treatment published by Anna Kleemann (1929c), Polstorff (1932) Lisak (1932) and others or the reports by Hill and Worster Drought (1929) Stalker (1929) Carmichael and Green (1928), with various preparations of stramonium, hyoscine and proprietary makes of belladonna alkaloids. And yet there is a remarkable difference between those reports and those on the Bulgarian treatment. After repeated visits to the Italian clinics and careful investigations in Italy and elsewhere we have to agree with the leading clinicians who have dealt with this problem that up to the present no treatment of the parkinsonian syndrome has given such satisfactory results as those obtained from the Bulgarian treatment.

The problem as to why the decoction of the Bulgarian belladonna root is more efficacious than the other drugs or the pure alkaloid cannot yet be said to have been solved. It is however, certain that the basis of the Bulgarian treatment is not atropine as such. We have confirmed the research work and the conclusions of Tocco (1936) in this connexion.

Expt 1.—Five grammes of the Bulgarian root finely pulverised were macerated in 100 c cm. of distilled water for five hours at a room temperature of 15–17° C, in conformity with the recipe of the Italian clinics. A drop of the filtered liquid thus obtained was instilled in a cat's eye and caused intense mydriasis after 15–20 minutes lasting for some hours.

Expt. 2.—The 5 per cent decoction of the Bulgarian belladonna root in white wine was filtered after 12 hours. Several drops of this decoction were instilled in a cat's eye and in spite of repeated instillations no reaction could be obtained.

Expt. 3.—The decoction was slowly evaporated on a water bath at a low temperature until its volume was reduced to one half. Several instillations of this concentrated decoction in a cat's eye produced no result.

The results of these experiments support the clinical observations that the visible effect of the Bulgarian treatment is different from that of other forms of treatment. The question whether it is possible that the method of preparing the decoction gives rise to intermediate products of the atropine or the other alkaloids of the Bulgarian root remains unsolved. It seems that the difference between the methods of treatment is essentially due to: (*a*) the potentially stronger action of the decoction of the whole root (*b*) the possible presence of intermediate products of the alkaloidal group; (*c*) buffer substances that serve to lower the toxicity equalise absorption and prolong the effect of the active principles.

ADVANTAGES

From the point of view of exact science, one would certainly prefer the measurable doses of known active principles and while some workers are still engaged in establishing this basis for the Bulgarian treatment also others tend to attach more value to the drug in toto which—empirically it may be—accounts for that greater tolerance slower absorption and thereby more prolonged action combined with lower toxicity.

These points may be proved by the following considerations:

(*a*) The pharmacopœias give the maximum dose of leaf powder as 0·2 gramme; of the fluid *extract from* root up to 1 minim and of the tincture up to 30 minims. The 5 per cent decoction used in the Bulgarian treatment is given in doses of 40–90 c cm a day corresponding to an intake of 2·0–4·5 g of root yet the toxicity is very low. Ferrannini (1935) tried to establish the toxic dose on dogs by giving up to 100 c.cm of the 5 per cent decoction at a time but as no appreciable toxic effect could be observed he stopped the experiment since 100 c cm is equivalent to more than ten times the maximum human dose.

(*b*) It has been proved by the experiments described above that the treatment cannot be *exclusively* an action of the atropine content of the decoction.

(*c*) The treatment can be interrupted for days and many cases have been recorded where none has been given for weeks without the reappearance of the symptoms.

(*d*) The results of the treatment can be expected according to our own experience and that reported by many clinicians to appear more quickly and with greater efficiency than those obtained with other alkaloids.

The disadvantage of the high-dose atropine treatment on the other hand seems to be the long *time* needed for the patient to become accustomed to the drug This calls for careful control, since tolerance is difficult to establish, the action of atropine being unstable and transitory, nor does it seem possible to suspend the treatment for a single day without giving rise to severe symptoms of regression Moreover a certain zone of danger has to be considered, as Siegmund (1935) recently reported cases of gastro-intestinal atony terminating in paralytic ileus He holds that the long-continued intake of atropine is capable of inducing alterations of the neuro-vegetative system which, disturbing the action of the parasympathetic system, lower the motility and tonus in given sections of the gastro-intestinal tract

He reports five cases where the post-mortem examination showed dilatation from the anus to the ascending colon, formation of stercoral ulcers with perforation, and general peritonitis In a sixth case, the patient died suddenly after three weeks' treatment with atropine up to 0 06 g a day, with signs of acute dilatation of the stomach The post mortem examination showed an enormous dilatation of the stomach which filled the whole abdominal cavity to the symphysis pubis, a dilatation of the duodenum, while the colon was less affected

This case started a systematic series of radiological examinations in patients treated with atropine Dr Fehsenmeier (1935) of the Burgerhospital, Stuttgart, reported seven cases of parkinsonian patients treated with atropine in high doses as showing excessive dilatation and ectasis of the stomach mostly combined with considerable dilatation of the whole colon or parts of it

On the other hand, the phenomena of intolerance observed with the Bulgarian treatment are, according to all authorities, very slight a feeling of vertigo, dryness of the mouth, and mydriasis, whereas there is never insomnia, hallucinations, or phenomena of delirium nor any alterations such as are observed by Roemer with the pure atropine treatment The radiological examinations which were systematically carried out after Siegmund's report became known showed that only in a small percentage was there a lowered tonus of the digestive tract and in the majority of cases no abnormality could be observed We may add that the experience of the Italian clinicians was gained from well over 3000 cases, certainly an abundance of clinical evidence

The general effects of the Bulgarian treatment on the symptoms may be summarised as follows

(*a*) The muscular hypertony, although in a variable measure, is undoubtedly most brilliantly influenced

(*b*) The involuntary movements . the results are excellent in most cases except in the oculogyral crises, which seem to yield only to prolonged treatment In the tremors, an almost constant symptom of the parkinsonian state, the results are in some cases very good but in the majority it never wholly disappears and is much influenced by emotion

(*c*) The reports regarding the disturbances in speech are not unanimous, while symptoms such as salivation excessive perspiration, and weeping crises are mostly easily overcome

(*d*) On mental anomalies, severe in so many patients, the treatment has had very little effect except for a few notable results We may quote Mann and Gopcevich (1935) who deplore the fact that one patient completely relieved of his physical immobility ended up in the confines of a prison for some agile felony On the other hand, many of those patients who exhibit lack of initiative, slowness of concentration and of mental perception, besides their physical impediments, show a remarkable impetus towards normal after the administration of the Bulgarian treatment It seems as if there is in reality a parallelism between the bodily and the mental changes

PREPARATION AND DOSAGE

The preparation of the decoction has been influenced by the original recipe of Raeff.

Thirty grammes of the root and rhizome of belladonna are macerated in 600 c cm of dry white wine containing from 10 to 12 per cent of alcohol (White wine is chosen on account of its smaller tannin content, avoiding a heavy precipitation) The maceration takes 5–6 hours and the liquid is then boiled for about 14 minutes, after which it is filtered through cotton wool and the decoction so obtained stored in refrigerators Various problems as *to the length of maceration*, the *time of boiling* which effects a reduction in volume and an increase in alkaloid content, will be dealt with at a later date

The dosage is controlled entirely by clinical observations of the physician, and it is quite certain that it cannot be given without exercising the greatest care

Panegrossi in Rome starts with an extremely small dose, 2–3 c cm being given at 11 P.M This dose is increased every day by 1–3 c cm until 20 c cm are reached The dose is then divided, half being given at 11 A.M and half at 11 P.M Again each dose is increased and finally decreased if necessary until an optimum dose is reached We should say that 60 c cm a day of the decoction for subjects otherwise healthy and without any hepatic, renal, or other gross organic disease can be safely given In very serious cases the dose can be increased to 90 c cm without any ill effect In addition, dietetic and physiotherapeutic methods are used to enhance the effects of the decoction The diet should be chiefly lacto vegetarian, with no alcohol, coffee, or spices, tobacco is also forbidden

The decoction we have used has been prepared from roots purchased in Bulgaria Enough material to treat 100 patients for a year would cost no more than £7

CASES TREATED

So far we ourselves have treated only two patients, both of whom have had various treatments previously

CASE 1

A married man aged 54, encephalitis lethargica in 1922, parkinsonian symptoms appearing shortly afterwards He first received treatment with atropine and as no appreciable result was obtained he discarded that to continue with hyoscine Under this his condition became stationary

At the start of the Bulgarian treatment, the hypertony and tremor were extremely severe and salivation was very troublesome He was unable to feed or dress himself His speech was at times scarcely audible and spasm of his masseters interfered with his feeding There was anteropulsion and a mask like face The treatment began at 5 c cm a day and reached a daily maximum of 90 c cm when he complained of vertigo His optimum dose was 60 c cm The general condition improved considerably within eight days The muscular rigidity decreased slowly within five weeks so that he was able to dress and feed himself and he could walk over half a mile after having been nearly four months in bed His face lost the mask like expression and he was able to join in his family life more than ever before since his illness An especially notable feature was the decrease of his tremor, and his palpebral spasm, which often had lasted for 24 hours, disappeared after the first two weeks No other toxic symptom was noted than the vertigo, which disappeared on lowering the dose

CASE 2

A married man aged 65, history of 20 years of parkinsonism On starting the Bulgarian treatment, he had been receiving 20 minims of tincture of belladonna daily for the last year His rigidity was severe and his salivation so great in spite of the belladonna that he was constantly soaked Tremor and antepropulsion were present; polysyllabic palilalia, and dysarthria were pronounced so that his speech at times was unintelligible He was often in a state of mental confusion. The Bulgarian treatment started with 5 c cm and went up to 15 c cm a day during the first week. His progress was almost incredibly good His expression became normal The salivation disappeared He could dress and feed himself and the disappearance of the speech abnormalities was the most interesting feature The treatment had to be interrupted on account of his mental state as he made attempts to escape from his relations house and behaved rather inconveniently

Considering the last patient s age and the duration of his illness as well as the failure of previous treatments with various alkaloids, the relief of his symptoms was unlooked for and surprising

SUMMARY

From the Italian and other foreign reports and from our own observations the Bulgarian treatment cannot but be classified as a symptomatic treatment even though it may in many cases be suspended with impunity for variable lengths of time In a considerable percentage of cases the results are definitely better than those which have been achieved in the past. There is less danger of complications The cost of the treatment is extremely low The scope for further research work is clearly wide both pharmacologically and clinically

We have to thank Dr A Gandellini of the Civic Hospital Legnano and Prof G Panegrossi of Rome for their courtesy in offering us every facility for investigating their methods of carrying out the Bulgarian treatment

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Rochdale Lancs

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION —A course suitable for D C H candidates will be given at the Infants Hospital from Sept 20th to 25th and a course in proctology at the Gordon Hospital from Sept 27th to Oct 2nd. A two-day course in plastic surgery will take place on Sept 15th and 16th A week-end course in ophthalmology will be given at the Royal Westminster Ophthalmic Hospital on Sept 25th and 26th and a course in fevers will be given at the Park Hospital on Oct 2nd and 3rd Detailed syllabuses of all courses, which are only open to members can be had from the secretary of the fellowship 1 Wimpole-street W 1

MINOR POINTS IN DIPHTHERIA IMMUNISATION

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DIPHTHERIA immunisation is one of the most discussed questions of the moment; it has therefore, seemed worth while to record some results obtained from work carried out in schools and institutions both rural and urban during the years 1934–36 No definite conclusions will be drawn as the numbers are too small. The actual figures are recorded as giving some indication of the methods employed.

METHOD

The *technique* was that usually used for intradermal testing The subjects all had a preliminary Schick test after which they received treatment with the appropriate reagent; finally, a second Schick test was carried out at varying intervals after treatment to determine the results The materials employed were toxoid antitoxin mixture (T.A.M) toxoid antitoxin floccules (T.A.F) and anatoxin or formal toxoid (F T)

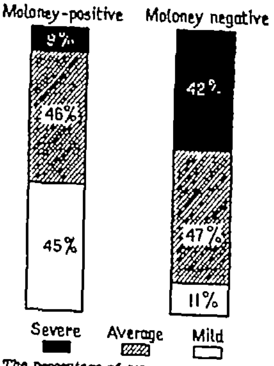
Sensitivity —It has been long realised that F T in sensitive individuals is capable of causing severe reactions To eliminate these it is necessary to detect susceptible individuals by means of either of the following —

(1) The Moloney (1927) test the technique of which is similar to the Schick test The test material is 0 2 c cm. of a 1/20 dilution of F.T Induration surrounding the site of injection (except that due to slight trauma of the test) is taken as the criterion of a positive reaction, indicating a sensitive individual; or

(2) The detector dose as described by Cheesey (1934) In this method a small preliminary subcutaneous injection of 0·1 c cm or 0·2 c.cm is given; susceptible individuals show a mild local or general reaction

Once individuals sensitive to F T are known unpleasant reactions may be avoided by modified dosage or the use of one of the other materials available.

Assessment of results —The results from all sources have been collected and analysed as a whole they are recorded in Tables I and II The term "standard dosage" indicates the system of dosage mapped out before the commencement of treatment: "special dosage" the dosage decided for each case individually on account of a positive Moloney reaction or some other contra-indication to F T As individuals vary in their degree of susceptibility instead of merely recording a Schick result as positive or negative, an attempt



The percentage of severe average and mild Schick reactions in Moloney positive and Moloney negative groups was made to classify them as faint, average, and severe This classification was made on clinical grounds—a reaction about 1 5 cm by 2 cm in diameter, and salmon pink in colour, being considered as "average" Most of the cases in this series had simultaneous Schick and Moloney tests performed. (In passing it may be remarked that the percentage of Schick positive reactors is much higher in the Moloney negative group, the Moloney and Schick tests seem to run counter to one another) The Schick positive reactors were divided into Moloney positive and Moloney negative groups and the proportion of "faint," "average," and "marked" Schick reactions in each group determined. The accompanying diagram serves best to illustrate the relationship It will be seen that, while the average Schick test comprises about 50 per cent of reactions in both groups, the bulk of the remainder is severe in the M negative group and faint in the M positive group

TABLE I—*Standard Dosage*

Material used	Dosage (c cm)	Treated	re Schicked	Schick positive	Per cent immunised	Remarks
F T	0 5 1·0 & 1·0	18	18	—	100	Moloney negatives
	1 0 1 0 & 1 0	68	68	8	*82	Unselected
	1·0 & 1 5	27	25	2	92	Unselected
	1·0 & 1·0	111	106	8	92 5	Moloney method
	0 1 & 1·0	40	38	17	50 2	'Detector dose' method
	0 2 & 1·0	42	40	11	72 5	
T A F	1 0 & 1 5	5	5	2	60	Staff of some institutions and Moloney positives
	1 0 & 1 0	10	6	2	66	
T A M.	0 5 1·0 & 1·0	34	27	10	63	Moloney positive mainly

* This group, consisting of children up to 12 years—more than half being from 3–5 years—did not have a preliminary Schick test Seven months after treatment 96 per cent were Schick negative

TABLE II—*Special Dosages*

F T	1·0 & 0 5	9	9	1	90 %	'Special doses' in the Moloney method
	1·0 & 0 2	6	6	—		
	1·0 & 0 1	3	3	—		
F T and T A F	1 0 & 0 5	2	2	—		
	0 1 & 0 5	1	1	1		
	0 1 & 1 0	2	1	1	—	Detector dose method

In some way a positive Moloney appears to be some index of immunity to diphtheria

REACTIONS

In this series reactions were not found to be a severe handicap when using anatoxin They could be more or less completely eliminated by the detection of sensitive individuals by the Moloney test or detector dose or some other reagent, and treatment by greatly reduced doses Although possible to avoid reactions, it is not possible to ignore them. Nothing is more likely to antagonise the public than a number of sore swollen arms and high temperatures

The danger is well illustrated by a case where a full dose of toxoid was given to a Moloney positive patient, a girl aged 14 being prescribed 10 c cm. anatoxin A reaction consisting of headache, vomiting, and general malaise developed within twenty hours, the temperature rose to 101° F The child was ill for three days, after which the symptoms gradually subsided

Unusual reactions are so rare in connexion with immunisation that it seemed worth while to record three that occurred —

1 A boy, aged 16, showed an intense reaction to the Schick test and control There was a reddened area about 5 cm in diameter, at the site of injection Engorged lymphatics ran up the arms as far as the elbow, and a faint scarlatinal form rash developed on the chest There was nothing else suggesting scarlet fever, the condition cleared up in 12 hours The boy never felt ill

2 A girl, aged 12, was Moloney positive, the indurated area being 1 5 cm in diameter Surrounding this area was a ring of petechial hæmorrhages about 1 cm wide The girl was Schick negative and showed no other abnormalities

3 A nurse, aged 22, was Schick positive although she had had diphtheria 14 years ago She was treated with three doses of T A.M (0 5, 1 0, and 1 0 c cm) causing a slight local and general reaction An eruption of herpes labialis appeared 24 hours after each injection, after which the slight malaise cleared up The herpes pursued a normal course No reference could be found to this type of reaction but it makes an observation of Alderhoff (1931) interesting Writing on immunisation in Holland he notes that encephalitis developed in a few cases treated with T.A.M

TABLE III—*Results of Serum Sensitisation*

Age	Result of test: (a) Before any injection (b) After F T	Interval after injection (days)	After injection and T A M	Interval after injection (days)
2 yrs	Nil	21	Indur	14
1 yr	(a) Nil (b) ? v sl indur	13	Severe indur	13
7/12	Nil	17	Indur	13
4/12	(a) Sl indur (b) Nil	17	,	13
10	Nil	13		15
10		16	Sl indur	15
7/12		17	Indur	15
3/52		17		15
2/52		15	Not tested with T A M	
2		15		
13		30		
9		16		
5		10		

V sl indur = very slight induration

SENSITISATION TO SERUM

There is one aspect of immunisation which does not seem to have received much attention The immunity producing mechanism is closely connected with sensitisation to the serum proteins It must be remembered that T A M contains antitoxin usually derived from horses It is logical to assume therefore that, in addition to immunising a child, this material is also making him serum sensitive This would not be of any importance if all immunisation was perfect and no other serum treated diseases existed, unfortunately neither is the case This point has been already noted, Gordon and Creswell

(1929) record that in the serum treatment of scarlet fever serum reactions occur in 74 1 per cent. of cases who have previously been immunised against diphtheria and in only 18 per cent of non immunised individuals.

Theoretically this sensitisation ought not to be produced by F T and a small experiment was carried out to test the point The subjects were infants and young children suffering from congenital syphilis and ophthalmia neonatorum At this age they were presumably not serum-sensitive but in order to obviate any fallacy from this reason they all received a preliminary intradermal test of 0 2 c cm. 1 5 dilution horse-serum The reaction was read in 1 3 and 24 hours swelling induration and redness being considered as indications of a positive result. The subjects then received 1 0 c cm F T and the same test was repeated at varying intervals (never less than 10 days, time to let serum sensitisation develop) the same criteria of a positive reaction being taken The procedure was then repeated with T.A M. Table III indicates the results.

It will be seen that T A M produces a sensitisation to horse-serum—a point in favour of F T

DIPHTHERIA IN AN IMMUNISED COMMUNITY

A small epidemic of diphtheria occurring concurrently with an epidemic of mild tonsillitis and pharyngitis formed a practical test of the efficiency of immunisation The inmates of a home drawn from rural districts—normally highly susceptible to diphtheria—were immunised in April 1935 and all (about 120) were Schick negative in June. Infection with *B diphtheriæ* occurred as follows —

CASE 1.—Man aged 20 naturally Schick negative developed clinical diphtheria on Oct 4th He was treated with 8000 units diphtheria antitoxin (D.A T) and recovered by Nov 15th.

CASE 2.—Girl aged 19 developed clinical diphtheria on Oct. 14th and was treated with 10 000 units D.A T She was Schick negative in June following treatment with F T

The other cases were carriers rather than clinical cases

CASE 3 —Girl aged 20 had mild tonsillitis and pharyngitis. Swab was positive on Oct 18th

CASE 4 —Girl aged 15 complained of mild sore throat Swab was positive on Nov 13th

CASE 5 —Girl aged 14 had mild tonsillitis Swab was positive on Nov 13th

Cases 4 and 5 had clinical diphtheria in January 1935

At the same time as the odd cases of diphtheria were developing and carriers were being detected, a wave of very mild tonsillitis and pharyngitis comprising about 30 cases, and apparently quite independent of the diphtheria cases and carriers, was occurring in the home The victims were not ill enough to be reported as sick and none developed diphtheria, but this mild epidemic indicated that droplet infections were taking place.

These facts show first that virulent diphtheria organisms had been introduced into the home as two clinical cases occurred in addition to three carriers. Secondly conditions were suitable for the development of droplet infections—as shown by the occurrence of an epidemic of mild tonsillitis Thus virulent organisms were present in a normally susceptible community under conditions suitable for spread. Only two cases occurred. This seems an argument in favour of artificial immunisation A high degree of success in face of known danger is perhaps more convincing than complete success against an assumed but unproven one.

SUMMARY

1 The results of various methods of immunisation against diphtheria are given.

2 Sensitive subjects can be eliminated by the Moloney and "detector dose" tests some unusual reactions are noted

3 T.A M was found to produce serum sensitisation to a therapeutic serum

4. The behaviour of a small epidemic of diphtheria in an immunised community is recorded.

I have to thank Dr W T Benson, late medical superintendent to the Edinburgh City Hospital and Dr W G Savage county medical officer Somerset for permission to publish the records and figures found in this paper which is based on a thesis submitted to Edinburgh University for the M.D degree

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EPHEDRINE IN THE TREATMENT OF ENURESIS

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THE discovery that ephedrine relaxes the involuntary muscle of the bronchioles in asthma has given this drug an important place in therapeutics It acts by a stimulation of the sympathetic nerve-endings which is much more prolonged than that of adrenaline Most of the involuntary motor and secretory functions of the body are under the control of the sympathetic nervous system which increases or inhibits activity according to the tissue or organ supplied. It follows, therefore, that ephedrine will have many effects and that its usefulness is not necessarily limited to its action in the bronchioles Thus it is employed locally to contract arterioles and lessen secretion in nasal catarrh while given in association with amylocaine and other spinal anæsthetics its general vasoconstrictor action serves to minimise any fall of blood pressure.

Many asthmatics are from time to time forcibly reminded that ephedrine has more than one action. Precordial discomfort and throbbing in the head are not uncommon and some subjects suffer acutely from the effect of ephedrine on the bladder This consists in an inability to urinate, notwithstanding a strong desire to do so The symptom may last for some hours When it is realised that the internal sphincter of the bladder is innervated by sympathetic fibres, the explanation of the retention is not far to seek. This effect on the bladder though unwelcome in asthma, is potentially valuable in conditions where there is a difficulty in bladder control and for the last three years I have sought to utilise ephedrine as a remedy in the nocturnal and diurnal incontinence of children.

In a disorder which shows a tendency to spontaneous cure and which is also susceptible to psychological influences, it is difficult to assess the value of any particular remedy In some of my cases however it seems probable that the [illegible]logic effect of ephedrine was the deciding

The method adopted is as follows The presence of a urinary infection is first excluded by examination of the urinary deposit Half a grain of ephedrine alkaloid in tablet form is then prescribed to be given at bedtime The dose is increased by gr ½ every three to four nights until in certain instances as much as 5 grains are being taken. In those cases which respond favourably it is found that enuresis at first becomes less frequent and then, as the dose is increased, disappears altogether

RESULTS

The results achieved may best be illustrated by citing two specific cases of severe enuresis

A boy of 10 with a strong urinous odour had never been able to control his bladder at night and suffered from frequency and occasional incontinence during the day He was a heavy sleeper and his bed was always very wet The nightly dose of ephedrine was gradually increased to 3½ grains On gr 2½ enuresis only occurred occasionally and then to a less extent than formerly, in that his mother reported the bed as much less wet At the same time incontinence ceased during the day On one occasion, when the tablets were forgotten, enuresis was as bad as ever After three months' treatment enuresis ceased completely The administration of the drug was continued for a further three months and at the end of this period it was found that he remained dry even when the ephedrine was remitted He has remained well since

A girl of 16 had been unable adequately to control her bladder from infancy Enuresis occurred every night and micturition often took place involuntarily during the day Apart from this one symptom she appeared normal in every way Treatment with belladonna and other recognised procedures had been conscientiously carried out but there had been no response Ephedrine was given in gradually increasing doses until she was taking gr 2 at bedtime and two doses of a grain each during the day On this régime the incontinence ceased and after continuing for several weeks it was found that she could dispense with the tablets, normal bladder function having been secured

In other cases the response is less complete The frequency of enuresis is diminished so that the child, who has been incontinent every night, may miss a variable number of nights each week, or dry periods may alternate with short relapses when the bed is again wet every night The general tendency is however towards improvement and ultimately after some months of persevering treatment the enuresis ceases In this type of case ephedrine appears to be an adjuvant to bladder control, though its effect is not strong enough to maintain sphincter tone in all circumstances

In yet other cases ephedrine fails completely or even makes the condition worse The reason for this appears to be that the objectionable effects of the drug on other parts of the nervous system overshadow the effect on the bladder and make it impossible to increase the dose to the desired level. Prominent among these side actions is cerebral stimulation. The child may be simply restless at night or there may be pronounced insomnia Sometimes there is sleep walking and in one of my cases delusions were present The patient, a boy of 5 on gr 2 of ephedrine at night complained until noon next day of seeing fishes everywhere and that they were biting him In some cases vomiting may occur about 2 A.M It is not usually accompanied by nausea or prostration and the child falls asleep again almost immediately More rarely complaint is made of palpitation. Toxic effects cease promptly when the drug is remitted but parents should be warned beforehand of the symptoms which may occur The insomnia due to ephedrine is to some extent relieved by giving gr ½–1 of phenobarbitone simultaneously

The results obtained in 38 consecutive and unselected cases of enuresis treated with ephedrine were as follows —

—	Boys	Girls	Totals
Enuresis ceased	5	5	10
„ improved	8	6	14
„ uninfluenced	4	4	8
Treatment not maintained	3	3	6
—	20	18	38

Many different ages and different constitutional types are included in the series The impression gained was that the older children of comparatively phlegmatic type benefited most from the treatment and it was these children who tolerated up to gr 5 of ephedrine without showing any untoward symptoms Such a dose given to an average person would produce considerable distress, and it is possible that the increased tolerance of these subjects to a sympathetic stimulant such as ephedrine may have a bearing on the ætiology of enuresis

DISCUSSION

The difficulty of identifying a causal factor common to all cases of enuresis, whether that factor be a certain constitutional type, a physical defect, or a psychological maladjustment, has again been brought out in a recent discussion (Royal Society of Medicine, 1936) In the present study careful inquiry was made into the personal and family history of each patient and a complete physical examination made Enuresis in other members of the family was only rarely reported and, though an investigation into hereditary influences could not be carried out with the same thoroughness as that of Frary (1935), the results of questioning the mothers of the patients did not confirm his view that enuresis is an inherited defect

Sources of possible peripheral irritation such as adenoids and threadworms were for the most part absent, or had already been dealt with without the enuresis being ameliorated It was noted however that a considerable number of the boys had not been circumcised.

The suggestion that enuresis is an allergic manifestation has been made by Bray (1931) who has also reported favourable results from the use of ephedrine In the present series careful inquiry as to possible allergy either in the patient or the relatives nearly always failed to support this view Tests for protein sensitivity were not however carried out

The importance of psychological factors in enuresis is widely recognised and is indeed apt to be exaggerated. Unsatisfactory environmental features may often be found, but it does not follow that these must necessarily be in causal relationship to the enuresis As a rule the environment and the child's attitude to it seemed to be beyond reasonable criticism In the few cases where there were definitely unhappy home conditions on which the incontinence was dependant, it was noted that ephedrine did not produce any improvement

In enuresis the influence of suggestion needs careful consideration in attempting to explain the action of any new measure That it is of limited importance as far as ephedrine is concerned seems to be indicated by the fact that often patients who have been improved by this drug have previously experienced disappointment with other remedies Moreover, in many of the cases where the incontinence has not been improved by a small dose, improvement only begins after the dose of the drug has been several times advanced. There is little doubt that the main action of ephedrine is on the endings of the sympathetic nerve fibres supplying the bladder stimulation of which increases the tone of the sphincter and depresses that of the fundus Hobhouse (1932) has emphasised the apparent increase in parasympathetic tone during normal sleep and he believes that an exaggeration of this is sometimes responsible for nocturnal enuresis He lays stress on the fact that many sufferers from enuresis sleep exceptionally soundly—an observation I have confirmed. In this connexion the additional action of ephedrine as a cerebral stimulant is probably of importance A child who usually sleeps soundly tends after a dose of ephedrine to sleep much more lightly as evidenced by unwonted restlessness or wakefulness It is possible that the superiority of ephedrine over belladonna may be explained in this way Belladonna has been employed for many years in urinary incontinence sometimes with success but more often with disappointing results There seems to be no reason why depressing the parasympathetic nerve endings, which supply the depressor mechanism should be in any way inferior to stimulating the inhibitory mechanism as with ephedrine In practice however ephedrine is more effective than belladonna and it seems not unreasonable to suppose that the difference may be dependant on the greater ease with which ephedrine produces cerebral stimulation

The fact that many sufferers from enuresis are able to tolerate doses of ephedrine considerably in excess of those usually regarded as maximum lends support to the view that enuresis is sometimes a manifestation of a constitutional type, where the parasympathetic-sympathetic balance is weighted in favour of the parasympathetic system In this way it may be assumed that considerable enhancement of sympathetic activity is required before the hypertonic parasympathetic can be adequately opposed Thus a relatively large amount of ephedrine is utilised and there is no excess to give rise to unwelcome side effects.

SUMMARY AND CONCLUSIONS

Ephedrine was given in 38 consecutive cases of enuresis over periods up to several months The enuresis ceased in 10 cases, and there was improvement in 14 others The ephedrine sometimes caused restlessness and other side effects but these were seldom seen in older children of phlegmatic type, some of whom seemed to have an unusual tolerance to the drug.

Those cases in which enuresis persists throughout school life only to cease in the late teens or early twenties are precisely the ones in which ephedrine appears to be of most value The peculiarity may be a grave handicap to the otherwise normal boy or girl and the assurance that the symptom will be outgrown in due course does little to relieve present embarrassment To such sufferers in particular ephedrine offers a prospect of permanent cure, and it is worthy of trial in the majority of younger subjects many of whom will be similarly benefited.

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CUSHING'S SYNDROME IN A MULATTO

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With a Histological Report by

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A MULATTO woman aged 35 was admitted into the City General Hospital, Leicester on April 27th, 1936 suffering from a left-sided lobar pneumonia of three days duration

HISTORY

The patient was the only child of an illicit union her father being black and her mother white She was herself unmarried and had given birth to a male child at the age of 30 Amenorrhœa had persisted since the commencement six years ago of that her only pregnancy A few months after the birth of the child she began to show signs of increasing obesity, and by the end of four years was almost 2 st heavier but thereafter her weight remained more or less stationary The distribution of adiposity was not noted. A little over six months before her weight ceased increasing hair was noticed on the chin and upper lip but it never became very abundant It heralded the onset however, of occasional frontal headaches and mild attacks of nocturnal dyspnœa Little reliable information could be obtained about the question of striæ. The patient admitted that there were a lot on her abdomen but had paid little attention to them. There was no alteration of voice or loss of libido Her previous health was excellent The menarche occurred at the age of 13; catamenia regular every 28 days and lasting 4–5 days

EXAMINATION

When examined after the subsidence of the pneumonia her intelligence was fair cerebration sluggish disposition cheerful no hoarseness of voice Stature short with a slight dorsal kyphosis. Generalised adiposity present affecting especially the face shoulders and girdle region A large goitrous swelling was visible in the neck—of the appearance of which incidentally the patient had taken no note regarding it as part of the increasing obesity Skin dark brown in colour Numerous violaceous striæ distensæ present on the abdomen; no other evidence of abnormal pigmentation either of the skin or of the immediately visible squamous mucosa. No petechiæ or ecchymoses. Moderate hirsuties of the chin and upper lip The pubic hair showed no definite tendency towards a male distribution. Teeth satisfactory

Cardiovascular system radial arteries palpable a regular tachycardia 110 per minute was present pulse of increased force and raised tension; blood pressure 232/158 mm Hg; apex beat not localisable; no cardiac murmurs second sound accentuated, more especially in the aortic and pulmonary areas; no œdema no acrocyanosis. Lungs normal Breasts pendulous no obvious atrophy Abdomen prominent (striæ as above); no tumour palpable Thyroid diffusely enlarged no palpable thrill; a cyst about the size of a walnut in the right lobe Central nervous system muscular power sensation deep and superficial reflexes normal no exophthalmos visual acuity fair no impairment of the visual fields no change of psyche in the direction of masculinity Genito-urinary system: clitoris not enlarged; digital vaginal examination revealed nothing abnormal.

SPECIAL INVESTIGATIONS

Urine was acid specific gravity 1024; albumin sugar and acetone present in small amounts; a few hyaline and many granular casts and a few red blood cells on microscopic examination. *Blood*: red cells 4,580,000, hæmoglobin 87 per cent, colour index 0·96. White cells 7500, including granulocytes 6150 and lymphocytes 1050. Wassermann reaction negative. *Cerebro-spinal fluid*: under slight pressure, clear and colourless; no cellular or biochemical abnormality. *Ophthalmoscopic examination* revealed a fairly severe bilateral neuro-retinopathy, with choked discs, severe sclerosis of the retinal vessels, numerous patches of fatty change, and several small hæmorrhages. *Glucose tolerance test*: fasting blood sugar, 110 mg. per 100 c.cm.; one hour after 50 g. of glucose, 225 mg.; two hours after, 200 mg. *Renal function test*: the urea-concentration range (Calvert Cameron) showed a maximum concentration in the urine of 1·9 per cent after 15 g. of urea, and a minimum dilution to 1·3 per cent after 2 pints of fluid. *X ray examination*: pituitary fossa enlarged; slight generalised osteoporosis; fracture of eleventh rib on left side anteriorly (there was no history of trauma); considerable left ventricular cardiac enlargement. *Electrocardiogram*: left axis deviation, otherwise normal.

PROGRESS

After the symptoms of pneumonia had disappeared slight pain still tended to persist in the left side of the chest (at the site of the fracture shown later by radiography). A mustard leaf was applied therapeutically. Removal of this revealed a deeply pigmented patch, dark brown in colour with a violaceous tinge, corresponding exactly to the size and shape of the leaf. About a fortnight after admission the patient began to get up for short periods. Weight 11 st. 3 lb.

On June 7th she had an attack of acute pulmonary œdema. Blood pressure 265/175 mm. Hg. From now onwards she was bedridden, similar attacks occurring on several occasions, and she also had occasional fits of depression. On July 12th cardiac arrhythmia present in the form of numerous irregularly recurring extrasystoles; blood pressure 266/210 mm. Hg; neuro-retinopathy more severe; blood urea 111 mg. per 100 c.cm. The specific gravity of the urine had been steadily diminishing during the few weeks previous to this. No increase of adiposity had been noted. On August 2nd œdema of the ankles was present. A definite change of psyche was noted about this time. The patient became rather drowsy, her attention could not be fixed, and speech was essentially in the form of a rambling soliloquy not infrequently devoted to the expression of heterosexual desires. The specific gravity of the urine had by now become fairly well fixed in the neighbourhood of 1012. Henceforward the œdema gradually became generalised. On August 7th the blood urea was 388 mg. per 100 c.cm. On the 10th a definite pallor developed, coincident with the appearance of widespread ecchymoses, which were especially numerous on the trunk. She became stuporous, with a falling blood pressure, and died in the evening.

POST-MORTEM EXAMINATION

Heart: gross hypertrophy of the left ventricle; the coronary arteries showed only a mild degree of arteriosclerosis. Aorta: numerous atheromatous patches throughout its length. Lungs rather pale and œdematous. Kidneys: no diminution in size; the outer surfaces were slightly granular; slight relative reduction in the breadth of the cortices; some increase of peripelvic fat.

The hypophysis was enlarged; it was separated with difficulty from the posterior surface of an enlarged pituitary fossa. A large adenoma was present in the anterior lobe. Weight of the gland 2·1 g. (0·0029 per cent. of body weight). Adrenals enlarged owing to a great increase in size of the cortices; no visible adenomata. Weight of the left gland 34 g., and of the right gland 26 g. (0·085 per cent. of body weight). Thyroid: diffusely enlarged. Outer surface smooth. Cut surface reddish brown in colour. A large cyst, 2 in. in diameter and containing a colloid looking material, was present in the right lobe. Parathyroids: not enlarged; removal for section neglected. Thymus not apparent. Pancreas: of normal size; rather firm in consistency. Ovaries small; single large cyst, 2½ in. in diameter, in the right. Uterus normal.

HISTOLOGICAL REPORT

Hypophysis.—The gland is enlarged. It measures 2 cm. from anterior to posterior margin. The anterior lobe is greatly compressed by a rather ovoid-shaped adenoma, which is extremely friable. On microscopical examination the adenoma is seen to consist of basophil cells. There is practically no stroma in the tumour except that carrying the relatively few blood vessels. The basophil cells are rather smaller than those seen in the normal gland. They tend to be arranged in radial fashion around the blood vessels and the radial cells are columnar in shape, and rather larger than the other tumour cells. Various forms of transitional basophils and a few chromophobes are also found. The anterior lobe is found as a crescentic mass between the tumour and the posterior lobe. The basophil cells in this remaining anterior lobe tissue show the hyaline change described by Crooke (1935). There is a little basophil invasion of the pars nervosa.

Thyroid.—This shows no lesions. The acini are rather large, filled with colloid, and lined by a flat epithelium.

Adrenals.—The cortex appears hyperplastic. This seems to be due to a diffuse change rather than to any localised adenomatous formations. The cells of the cortex with the exception of those of the zona glomerulosa, give the fuchsinophil reaction described by Vines (Broster and Vines 1933). The medulla has no lesions. The cortical arterioles show thickening and hyalinisation.

Pancreas.—No appreciable changes in the islet tissue; there is no hyalinisation. The acinar tissue and ducts are normal. The arterioles are thickened and show fatty and hyaline degeneration.

Ovary.—There are numerous follicles some of which are in various stages of follicular maturation. There is no excessive follicular maturation or luteinisation.

Kidney.—The glomeruli and tubules appear relatively normal. Many of the small arterioles are thickened and hyaline, but the glomeruli show remarkably little change. The large vessels are normal.

DISCUSSION

This appears to be the first verified case of Cushing's syndrome occurring in a coloured subject. An interesting feature of the anamnesis is the persistence of amenorrhœa after childbirth, suggesting the possibility at least of pregnancy having been a predisposing or an actual exciting factor. The clinical findings are characteristic. Virilism was not very pronounced. The radiographic evidence of osteoporosis was inconclusive, although the presumably pathological fracture of a rib favoured its presence. Lachmann and Whelan (1936) consider that any decalcification of less than 20 per cent. can only be diagnosed under the most favourable circumstances, and that the calcium loss in most bones must be higher, even up to 40 per cent., in order to be visible. Enlargement of the sella turcica is a very unusual finding in Cushing's syndrome. Its definite radiographic presence here was practically pathognomonic of a basophil adenoma, and taken in conjunction with the mild degree of virilism, made a diagnosis of adrenogenital syndrome unlikely. A diabetic type of glucose tolerance curve was obtained. No polycythæmia was found. The mental aspect of endocrine disturbance has come into some prominence lately, but the terminal psychic changes that occurred can well be attributed to circulatory changes in the brain secondary to the hypertension and cardiac failure, without implicating the diencephalo-pituitary apparatus.

The autopsy revealed that the kidneys were remarkably little damaged, confounding a clinical diagnosis of nephrosclerosis based on the gross hypertension, severe neuro-retinopathy, poor result of the renal efficiency test, high blood-urea, and the terminal fixing of the specific gravity of the urine near 1010 the approximate level of the maximal concentrating power of decompensated kidneys The apparent signs of renal failure must have been largely of pre renal origin associated with the hypertensive cardiac failure which eventually caused death.

The constant phenomenon of hyaline change in the basophil cells of the pituitary which Crooke (1935) regarded as indicating altered functional activity rather than degeneration was observed The basophil adenoma was very large compared with those usually found, being almost 2 cm in diameter A colloid type of goitre was present Little pathological change was visible in the islet tissue of the pancreas. As usual, adrenal cortical hyperplasia was found and what is probably more significant the fuchsinophil reaction of Vines was demonstrable in certain cortical cells. The ovaries showed no atrophic changes

ADDENDUM

Inhibition of the gonads is present in Cushing's syndrome Is this an accurate statement of fact? Would it not be more correct to say in a woman that there is an inhibition of the feminine gonads and a stimulation of masculine rudiments in the adrenal cortex? In other words might the virilism be an indication of some 'androtropic' change in the normal gynæcotropic activity of the gonadotropic secretion of the anterior hypophysis? If one believes that the gonadotropic hormone is formed in the basophil cells this conception helps to reconcile the apparent paradox of a basophil adenoma being associated with inhibition of the gonads" Further might this suggested androtropic change be manifested by hyalinisation of the basophil cells and secondarily by a fuchsinophil reaction of Vines in certain of the adrenal cortical cells, and even secondarily also by a basophil adenoma itself, on a compensatory gynæcotropic basis? The gonads are well known to exert a diabetogenic action either because of their specific function or through their influence on other organs On the above hypothesis the diabetes mellitus found in Cushing's syndrome might be largely due to a combination of normal and abnormal gonadal activity causing a relative insufficiency of insulin. It could also be argued that such a summation might in some way be the mediatory cause of the hypertension Finally one can wonder whether there may not be normal cycles of androtropic activity in the female (possibly during the luteinisation phase of the menstrual cycle) and of gynæcotropic activity in the male which have a profound influence on the determination of sex. In this connexion, it is interesting to note that the child of the patient, in the case reported above was a male permitting one to speculate whether this male gestation conceived possibly during a phase of normal androtropic activity could have initiated an abnormal androtropic activity ultimately manifested as Cushing's syndrome

We are indebted to Dr E C Hadley medical superintendent of the City General Hospital Leicester for permission to publish this case and to Dr E M. Ward pathologist to the Leicester City Hospitals who performed the autopsy

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CLINICAL AND LABORATORY NOTES

CONTROL OF LOCAL SEPSIS IN RADIUM THERAPY BY THE USE OF PROFLAVINE OLEATE

BY ALEXANDER A CHARTERIS M.B Ch.B Glasg
D.P H F R.F P.S G

RADIUM THERAPIST AND DONALD RESEARCH SCHOLAR FOR CANCER WESTERN INFIRMARY GLASGOW

THE radiotherapeutic treatment of a malignant lesion in the presence of sepsis as a complication of the neoplastic process is not only difficult technically but involves the risk of the spread of a localised infection. Moreover the malignant tissue is less likely to respond so well to irradiation. Attempts have therefore been made to improve the treatment of septic complications before radium is applied The results obtained by the method described below seem to merit record

I have found a definite place for a suitable type of antiseptic in certain branches of radium work before and during treatment as well as during certain phases of the period of reaction. Such an antiseptic must have a good bactericidal action, but must be non irritating and should preferably be capable of application in some bland oily medium The common antiseptics proved very disappointing but acriflavine in a strength of 1–1000 in a simple mixture of equal parts of olive oil and lime water was less unsatisfactory It seemed likely however that a better preparation might be obtained and with the assistance of Prof. C H Browning I was able to try a preparation of proflavine oleate. This was made up in a strength of 1 per cent in liquid paraffin and also in olive oil. The preparation proved to be a stable and entirely suitable material from all points of view and it has been in constant use since July 1936 There did not appear to be any significant difference between its action in liquid paraffin and that in olive oil, so the former medium was chosen

The chemical and antiseptic properties of the proflavine oleate were investigated by Browning nearly 20 years ago and it was used originally in the treatment of open septic wounds by C Berkeley and V Bonney[1] It is comparatively insoluble in water but when the medium containing it is intimately admixed with serum sufficient dissolves to impart pronounced antiseptic properties to the serum When proflavine oleate is brought into close contact with the tissues a depôt of antiseptic is secured It also possesses a physical property which is of great clinical value when dressings and packing covered with it are applied to a raw surface they do not adhere and so can be readily and painlessly removed later on A recent comprehensive review by Browning[2] of the chemotherapeutic antiseptics contains much useful information regarding their pharmacology and practical applications.

It is in the radiological treatment of cases of carcinoma of the cervix and of malignant lesions involving the skin that I have found this antiseptic most useful Since

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[1] *Brit med J* 1919 1 152
[2] *Edinb med. J* 1937 n.s. 44 497

1929 treatment of carcinoma of the cervix has been carried out in the Western Infirmary by radiological methods alone The radium technique is based upon the methods used at Stockholm, and, since February, 1936, by the coöperation of Dr J S Fulton, preliminary treatment with X rays has formed part of the routine Improvement in the control of local sepsis was manifest clinically from the time when proflavine oleate was first used at the end of July, 1936, and in my view is attributable entirely to the action of the antiseptic While pelvic sepsis after utero vaginal application of radium has been a rare complication, even in advanced cases, the local sepsis associated with an ulcerating neoplasm is always much aggravated after radiotherapy, even after the comparatively short local treatments associated with the Stockholm principles, the packing becomes foul and the patient is often miserable The use of packing saturated in the proflavine preparation to keep the radium in position has changed the situation completely, and only in very few cases is it desirable to resort to preliminary application of the antiseptic as well The patient is more comfortable throughout, little discharge occurs after treatment, and the packing comes out in a reasonably fresh condition No system of douching can, in my experience, achieve such results It is obvious, however, that local applications will not affect a pyometra, for which free drainage must remain the only treatment possible

When *malignant lesions involving the skin*, either primarily or secondarily, with attendant ulceration and sepsis, require to be treated by implantation of radium, preliminary dressing with proflavine oleate will dry up the septic discharge rapidly and render the part clean enough for the operation No dressings may be necessary during the period of radiation, or possibly one change will suffice, and no active sepsis will be evident if the preparation is liberally applied and not allowed to dry The effect is much superior to that obtained with any other antiseptic I have tried, including watery solutions of acriflavine These considerations apply with equal force to surface applications of radium and make it possible to treat the patient with a minimum of discomfort or disturbance of apparatus It may be convenient to give certain surface treatments by the method of building up [illegible]n apparatus with Elastoplast and adhesive felt, and, [illegible]ould the lesion be an ulcerating one, it is often safe to [illegible]ver it entirely after preliminary application of proflavine [illegible]eate

My experience has led me to use the preparation regularly as an antiseptic in cases for implantation where there is no sepsis, but where it would be difficult to prepare the skin by other means, as, for example, in the region of the inner canthus of the eye After treatment of the neck with radium collars at a distance of 5 cm, small chronic septic foci occasionally develop in the skin, and these may be prevented by frequent painting with proflavine during the period of exposure Finally, it has been found in the throat, nose, and ear wards that the preparation controls sepsis where "exenteration" of nasal sinuses has been carried out for malignant disease and radium apparatus has been inserted

The preparation also proves useful during the reaction period if the growth has ulcerated, or if there is much discharge and a tendency to superficial sepsis in cases where an area of skin has been subjected to moist desquamation In either case it will usually lessen discharge and clean the part in a day or so, giving the patient great comfort both from its antiseptic action and the soothing effect of the oily medium Simple dressings with vaseline or lanolin should then be substituted to avoid the occurrence of dermatitis That this complication is rare may be judged from the fact that I have only seen it twice although hundreds of patients have been treated freely with proflavine oleate, in these two cases the dressings were continued much longer than was actually necessary, and the condition rapidly subsided under treatment with bland ointment

I express with much pleasure my indebtedness to Prof Browning for his suggestion, and also to Prof S J Cameron and the visiting physicians and surgeons of the Western Infirmary who have given me every facility for elaborating radiological and concomitant methods of treatment in their wards

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RUPTURED SPLEEN FROM A SLIGHT INJURY

By P H R Ghey, M B Camb, F R C S Eng
RESIDENT SURGICAL OFFICER AT ADDENBROOKE'S HOSPITAL, CAMBRIDGE

Traumatic rupture of the normal spleen occurs sufficiently often that a single case is seldom reported The case described below is of interest in that the initial injury was so slight and, having occurred some days before the patient came to hospital, had been forgotten until he was closely questioned What had appeared, therefore, to be a straightforward case of acute appendicitis was only correctly diagnosed at operation

The patient, a farm labourer aged 60, was admitted to Addenbrooke's Hospital, Cambridge, during the afternoon of July 20th suffering from abdominal pain

History—He felt in his usual perfect health when he went to bed on July 18th, but was awakened about 1 A.M by the sudden onset of severe generalised lower abdominal pain It was the worst pain he had ever experienced He sweated profusely and retched but did not vomit, though he tried to do so After an hour of pain he became much easier and fell asleep, and slept normally till the morning when he woke at his usual time On getting out of bed the lower abdominal pain started again, though it was not so severe as before It was a constant ache, worse on the right side of the abdomen. At no time did he have any pain or discomfort above the level of the umbilicus, nor any pain referred to the tip of the left shoulder He felt faint on standing upright, and returned to bed where he remained until he was transferred to hospital on July 20th He still felt sick and had no appetite His bowels had acted normally each day His only previous illness was enteric fever during service in the Boer War

Examination—Spare build, good colour and not in much pain Temperature 99 2° F, pulse rate 78, respirations 20 Tongue moist with a definite fur Abdomen was slightly full but presented no other abnormality on inspection There was tenderness all over the lower abdomen, more on the right side than the left Rectal examination revealed no abnormality A confident diagnosis of acute appendicitis was made

Operation—Abdominal palpation under anæsthetic was normal and no mass was felt A right lower pararectal incision was made As soon as the peritoneum was opened fluid blood poured out, and the pelvis was full of blood No abnormality could be found in those organs which could be examined through this small wound This was closed and the abdomen reopened by a left paramedian incision. Here, no blood was found until a hand was passed up to palpate the spleen The spleen was twice its normal size owing to a subcapsular hæmatoma on its convex surface It was lightly adherent to the surrounding structures, including the great omentum When this had been detached a few ounces of clotted blood were seen lying under the diaphragm The capsule of the spleen had ruptured at the lower pole The spleen was removed in the usual manner The blood was mopped out of the peritoneal cavity as well as possible and one pint of saline poured in just before the peritoneum was closed At the end of the operation the patient was in good condition with a pulse rate of 100

Progress—He made an uninterrupted convalescence except for unexplained pyrexia on the 5th–8th days, rising in the evening to 102° F He left the hospital on the 16th day after operation

The day after operation the patient was questioned closely about any preceding abdominal injury It was only then that he remembered the slight accident which was undoubtedly the cause of his illness On July 14th four days before the onset of his pain while leaning over a hurdle and standing on the bottom rail his foot slipped and he fell striking his abdomen at the level of the umbilicus The blow was so slight that he did not even pause in his work nor did he feel faint He worked on the farm for the rest of that day and each succeeding day up to the onset of his pain During this time he did his full manual work and felt perfectly well

Pathological examinations of the spleen and blood gave normal results

On reconsidering the case with its completed history and operative findings in an endeavour to explain the error in diagnosis it seemed that the man sustained a hæmatoma of the spleen on July 14th and had had no symptoms until it ruptured in his sleep four days later From the distribution of the blood in the peritoneum as found at operation it would appear that this had run across above the level of the transverse colon to the right side of the abdomen and then down the right paracolic gutter to the pelvis

It is well known that a perforated duodenal ulcer may simulate acute appendicitis owing to the course taken by the escaping fluid. In this case I assume that the slow leaking of blood from the spleen following the same mechanism gave the symptoms and signs that led to the error in diagnosis

I am indebted to Mr W H Bowen for his permission to publish this case, on which I operated

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BRITISH MEDICAL ASSOCIATION

SECTION OF TUBERCULOSIS

AT a meeting on July 21st Dr JOHN R GILLESPIE (Belfast) presiding a discussion on

Tuberculosis in Hospital Workers

was opened by Dr PETER W EDWARDS (Market Drayton), who said that in England we were still without facts but that the Registrar General had promised at the end of the year to supply data about the incidence of tuberculosis among nurses For the moment we had to rely mainly on reports from other countries notably from Scandinavia and from America The following points emerged from a review of the literature of the subject Observers were almost unanimous in finding that the nurse who reacts negatively to tuberculin at the beginning of her training runs a much greater risk of contracting the disease than does the positive reactor As might be expected institutions admitting tuberculous cases show a higher incidence amongst their staff than those in which no cases of the disease are treated Obviously there could be no infection without the bacillus, but at the same time there were grounds for believing that sanatorium nurses, who are facing a known danger run less risk of becoming infected than nurses in general hospitals admitting a few tuberculous cases often not diagnosed at the time of entry The percentage of Mantoux negative nurses was rapidly increasing pari passu with the decline in the prevalence of the disease and it was significant that Mücke (1926) discussing 150 cases of tuberculosis in 4284 nurses during a period of 18 years noted that an incidence of 1 per cent up to 1918 was subsequently raised to 4 6 per cent Coming to methods advocated for the prevention of infection in nurses Dr Edwards mentioned the work of Geer (1934) who found that the introduction of strict aseptic technique coincided with a fall in the incidence of tuberculosis from 2 75 per cent. to 1 6 per cent

In his own experience at the Cheshire Joint Sanatorium out of 54 Mantoux positive nurses there was 1 case of tuberculosis whereas out of 11 Mantoux negative there were 2; his work admittedly on a very small scale was therefore in agreement with that of Heimbeck and others Dr Edwards proceeded to discuss the best way of preventing the spread of tuberculosis to hospital workers. In the first place he said spitting still received too little attention Proper disposal of sputum and the control of droplet infection by holding a handkerchief in front of the mouth when coughing were hygienic measures of the greatest importance Nurses should be instructed not only to wash their hands when leaving the ward but also to get out of their uniforms as quickly as possible Neither nurses uniforms nor doctors white coats *should be worn in the residences or during meals.*

At the beginning of training nurses should be Mantoux tested and those giving a positive reaction should be X rayed Negative reactors should be tested again at 3 monthly intervals Good results had been reported from the use of B C G but Dr Edwards did not think that the time had yet come for its use in this country in changing a negative to a positive reactor The fear that increased attention to the risks of contracting tuberculosis might still further increase the difficulty of obtaining an adequate supply of nurses should be counteracted first by seeing that adequate hygienic measures were taken to prevent infection, and secondly by giving nurses the same freedom as girls employed in industry At the Cheshire Joint Sanatorium the trained nurses were now *running their hostel as a club without interference* by the medical superintendent or the matron, and the experiment had proved an unqualified success

Dr Edwards ended with a plea for the employment in sanatoriums of doctors and nurses who had recovered from tuberculosis At present although no benefits could be drawn for ten years superannuation schemes made it more serious for a doctor or nurse to contract tuberculosis than syphilis whereas mostly the outlook was good as regards continued working capacity

Dr JAMES WATT (Godalming) also referred to the difficulty of getting at the facts He thought the evidence showed a higher incidence and mortality amongst nurses not only for tuberculosis but also for other diseases. Nurses in general hospitals run a greater risk than those in sanatoriums the incidence of tuberculosis in the latter class being probably not much different from that of the general population. However well conducted a sanatorium might be the risk of infection could not be entirely eliminated. Dr Watt had recently been able to demonstrate the presence of sufficient tubercle bacilli to infect a guinea-pig in an appreciable proportion of the sheets and pillow-cases used by sanatorium patients This observation indicated that patients laundry should be put directly into bags without unnecessary handling At King George V Sanatorium there had been no recorded case of infection of the staff with tuberculosis for 14 years but during the last 16 months there had been three cases of erythema nc [illegible] radiological infiltration

Dr Esther Carling (Peppard Common) held that the two factors leading to the spread of tuberculosis in hospital staffs were infection and strain She thought it wrong that young nurses should be subjected to the additional strain of passing examinations while doing full duty in the wards Night duty produced an even greater strain

Dr Madge Macklin (Ontario) stated that in Canada, although the provinces had not adopted a uniform practice, it was usual for nurses to be tuberculin tested and for the positive reactors to be X rayed, 6 out of 22 general hospitals refused T B negative nurses, 8 others preferred T B positive, but as 70 per cent of applicants were negative they had been unable to restrict the entry to positives Almost all nurses were T B positive on graduation, and most sanatorium nurses had already graduated from a general hospital. Considerable risks were run in mental hospitals where the prevalence of tuberculosis was high and where young nurses were taken on The incidence of tuberculosis in hospital nurses was found to be about three times that of the general population, sanatorium nurses were older and had longer periods of rest than hospital nurses, they consequently had a lower incidence of tuberculosis

Dr Robert Marshall (Belfast) had studied the incidence and mortality from tuberculosis in the nursing staff of Belfast hospitals In the general hospitals out of 1839 probationer nurses there had been 9 cases of tuberculosis, 5 of which proved fatal, in the mental hospitals out of 853 nurses there were 5 cases (4 fatal), 426 sanatorium nurses provided 9 cases, only 1 of which was fatal The sanatorium nurses thus showed a higher infectivity *but a lower mortality*

At a meeting on July 22nd, when Dr A Trimble (Belfast) presided, the

Surgical Treatment of Apical Tuberculosis

was under discussion

Dr Carl Semb (Oslo) spoke on thoracoplasty with extrafascial apicolysis The primary object of collapse therapy, he said, should be the closure of cavities, this should be (1) *complete,* as the uncollapsed cavity was always a potential danger, (2) *selective,* as the already diminished vital capacity of the tuberculous patient should not be unnecessarily sacrificed, and finally (3) the *operative risk* should be small—i e, not above 1 to 3 per cent mortality In the speaker's experience of 177 cases chosen for thoracoplasty 90 per cent had upper lobe cavitation only; only 10 per cent of this series therefore needed a total thoracoplasty In 102 unselected cases 84 per cent of the cavities were situated posteriorly, collapse of the upper and posterior part of the lung was thus the most frequent object of thoracoplasty Artificial pneumothorax should always be tried first, where practicable it was the ideal method of "collapse therapy" as the introduction of air into the pleural space enabled the lung to retract by means of its natural elasticity The aim of thoracoplasty should also be to liberate the lung and allow it to retract concentrically towards the hilum Referring to other methods of thoracoplasty, Dr Semb stated that even after extensive rib resections the collapse of upper lobe cavities is often incomplete, non selective and even contra-selective, the reason being that the lung remains attached upwards, medially, and posteriorly by adhesions which prevent it from retracting downwards The combination of thoracoplasty with apicolysis had been designed with the purpose of overcoming these objections, the performance of extrapleural apicolysis might be difficult or impossible on account of adhesions between the parietal pleura and its surroundings, there might also be a risk of penetrating the cavity or the subclavian vein These considerations had led the speaker to seek a more favourable route in the plane outside the endothoracic fascia He had now carried out this type of radical apicolysis in a series of more than 250 cases without a single failure He said that after extrapleural apicolysis the space above the lung becomes filled with exudate but when this is absorbed the lung may be drawn out again and the cavity re expand, the extrafascial route avoids this possibility, as here the retracting lung is covered by endothoracic fascia and partly by periosteum, rib regeneration therefore fixes the lung in its retracted position Dr Semb proceeded to describe, with diagrams, the technique of his operation, which is performed under local anæsthesia In planning the amount of rib to be resected the following facts were, he said, important cavities should be accurately localised as those situated laterally require less resection than those near the mediastinum, young, relatively soft lesions are more easily collapsed than old fibrous walled cavities, the operation is carried out in two or more stages, in the first of which three to five ribs are resected through a posterior incision and apicolysis is performed The speaker had found, in a series of 246 cases, that a higher death rate and more severe post-operative complications follow when six or more ribs are resected in one stage, in particular atelectasis on the affected side occurs in less than 5 per cent of cases when only 3 or 4 ribs are resected, but rises rapidly to the high figure of 61 per cent when a total thoracoplasty is performed in one stage Evulsion of the phrenic nerve should not usually, according to Dr Semb, be performed before a thoracoplasty, paralysis of the diaphragm had, he said, a very limited effect in collapsing upper lobe cavities, and by sacrificing much of the function of the healthy lower lobe it is contra selective In addition to these drawbacks it definitely increased the operative risks as it interfered with the effectiveness of cough so that a "drowned lung" may result Dr Semb had found paraffin plombage to have no advantages over thoracoplasty, the immediate mortality being higher and the risk of complications attributable to the presence of a foreign body considerable

Mr J E H Roberts (London) contrasted the collapse obtained by artificial pneumothorax, which was usually unselective and sometimes contra selective, with the more accurately planned surgical collapse A particularly difficult group of cases were those in which on account of an apical adhesion the pneumothorax merely served to flatten a cavity against the mediastinum Mr Roberts agreed with Dr Semb that phrenic evulsion rarely closed apical cavities, and in his experience also apicolysis was an unsatisfactory operation In patients too ill to undergo apical thoracoplasty he had recently obtained encouraging results by extrapleural pneumothorax

Dr Andrew Morland (London) said that for the chest physician the problems of thoracic surgery were reduced mainly to deciding which cases required surgical treatment and when was the most favourable time for intervention In the absence of contra indications a cavity which was causing symptoms was safer closed Artificial pneumothorax should always be tried first, if it failed surgical treatment should be considered It was important to wait until the patient's resistance had been built up sufficiently to allow the formation of fibrous tissue to begin surgical shock being likely to cause exudative lesions to flare up In considering contra indications it was mainly on the better lung that anxiety was centred in general the quality of the lesion in this lung was more important than its extent Small woolly shadows may require months of watching whereas more extensive fibrotic lesions may be passed Finally the patient's psychological condition must be assessed where nervousness is great operative shock tends to be worse and it is worth while waiting until the patient's confidence has been gained

Mr G A **Mason** (Newcastle-on Tyne) said he would like to see several new operations properly tried out such as the ligation of the pulmonary vein from the affected lobe the direct drainage of solitary cavities and also lobectomy and pneumonectomy When apical cavities are held out by adhesions which cannot be divided the diaphragm should be temporarily paralysed by a phrenic crush the reason for this being that this operation is only effective in about 50 per cent of cases and that should thoracoplasty subsequently be required a diaphragmatic paralysis on the affected side adds considerably to the risks of the operation The speaker considered Dr Semb to be unduly afraid of apicolysis with paraffin plombage

Dr G S **Todd** (Midhurst) considered that thick walled cavities causing cough and sputum required active treatment without delay; this type rarely responds to A P and other methods should be employed if necessary Phrenic evulsion certainly caused closure of apical cavities in some cases and the danger of basal spread with subsequent thoracoplasty had probably been exaggerated Apicolysis had proved disappointing and thoracoplasty gave the best chance of cure in chronic apical cavities The Semb operation gave more complete apical collapse than previous methods but in three cases he had seen the cavity merely pushed down and not collapsed; he had also found the *after treatment* of operated cases more stormy

Mr H **Morriston Davies** (Ruthin) said that in the production of effective surgical collapse compression was necessary and not relaxation as described by Dr Semb The removal of much rib was therefore a mistake as torsion of the costal cartilages played an important part in the production of adequate compression of the hemithorax.

Mr G B **Purce** (Belfast) mentioned the good results that might be obtained by adhesion cutting and phrenic evulsion.

Dr L S T **Burrell** (London) disagreed strongly with the saying that the treatment of tuberculosis is the treatment of cavities. Some cavitation is almost always present in the lung by the time physical signs appear and radiography has taught us not only that cavities are more frequent than we used to think but that advanced disease with large cavities may heal His advice would be to err on the side of doing a pneumothorax when doubtful about it but not to be precipitate when doubtful as to the necessity of a thoracoplasty or apicolysis

Dr **Behrens** (Davos) also spoke of the good results he had seen from extrapleural pneumothorax which sometimes required the introduction of oil to prevent re-expansion

SECTION OF OBSTETRICS AND GYNÆCOLOGY

Prof C G **Lowry** (Belfast) presided at a meeting of this section when Prof **Joseph B De Lee**'s talking film of the

Forceps Operation, including Episiotomy and its Anatomy

was shown. This film was prepared by Prof. De Lee to demonstrate a method of performing lateral episiotomy which he uses in all primiparæ and in some multiparæ. He believes that it protects the fœtal head and ultimately the pelvic floor The film showed lateral episiotomy performed on a wax model showing the different layers of tissue involved The skin and superficial muscles were cut through, and the vaginal wall, the urogenital fascia and the levator ani muscle Repair was done very carefully and began high up in the vagina the separate cut ends of the levator muscle being seized with special forceps Figure of eight sutures of silkworm gut were used and the ends tied over a finger to prevent the development of tension. The skin edges were held together for five minutes with special forceps and then released A finger in the rectum prevented the stitches from going through The commentary on the film enumerated the indications for forceps intervention The case demonstrated was a primigravida aged 37 with a fœtus lying in the transverse position arrested in the pelvis Episiotomy was performed before the application of the forceps or distension of the perineum Hæmostasis was secured with gauze pads. Manual rotation was performed and forceps applied and a very skilful delivery was demonstrated. The use by each assistant of two retractors with a large rounded blade simplified exposure of the cervix and the stitching up of a minute laceration.

Mr H I **McClure** (Belfast) read a paper by him and Mr C H G **Macafee** entitled A Critical Survey of 340 Cases of

Breech Delivery

These breech cases represented 6·03 per cent of all deliveries in the hospital in private practice 2 5 per cent of deliveries were breech presentations Cæsarean section was performed in 3 of the 340 cases for the rest the classical method had been used by the resident medical staff In assessing results they had found that too much emphasis was laid on so called complicated breech They did not regard extension of the legs as a complication but as almost the rule in primiparous cases placenta prævia or contracted pelvis were true complications which in this series occurred more frequently in multiparæ In emergency cases the fœtal mortality was more than double that in those who had had antenatal supervision whether they were primiparæ or multiparæ The corrected mortality was 6·1 for all cases but no maternal death had been attributable to the presentation There was a morbidity of 15 per cent of the cases that had been interfered with. Attempts at external version should be made at any time after the 30th week as later the increasing size of the fœtus made the operation more difficult No anæsthetic was used the Trendelenburg position was especially useful in cases with extended legs. During delivery there was no interference until the birth of the umbilicus or until the breech had ceased to advance An episiotomy was always done in primiparæ, and if necessary in multiparæ When the arms were extended it was unnecessary to rotate the head through the long arc in order to bring down the anterior arm Besides the disadvantage of the long turn, an occipito posterior position of the head might result During the manipulation of short rotation for bringing the anterior arm to the posterior position, the arm could be prevented from coming to lie behind the head by keeping the operator's fingers along it, thus splinting it, and keeping in front of the child's face The head should be delivered slowly, tentorial tears were a greater danger than was asphyxia

Prof D Dougal (Manchester) did not favour rotation through the shortest arc for getting the anterior arm into the posterior position He himself did not think the breech position a very serious complication but doctors were inclined to be afraid of it Extended legs should be left unless the breech failed to advance

Dr A E Chisholm (Dundee) had found it useful to apply pads and binders after external version to prevent recurrence of the breech presentation

Mr L Carnac Rivett (London) expressed agreement with the principle of leaving the breech alone as long as possible He did not think episiotomy necessary He used an anæsthetic for external version whenever he could not do it without one He thought that the neonatal death rate was probably higher after breech than after normal deliveries, and that the risks to the mother were definitely greater than in vertex deliveries In his experience pads were helpful.

Prof E C Crichton (Capetown) thought that so many external versions were now performed that students would learn nothing about breech deliveries

Prof J Chassar Moir (Oxford) thought breech deliveries were usually regarded too lightly Contraction of the pelvis was a serious complication and careful measurements, if necessary supplemented by radiograms, should be taken He thought a generous episiotomy necessary with any but a very small breech

Dr H R Frederick (Port Talbot) thought the episiotomy demonstrated was an operation too formidable to be undertaken by general practitioners, a simpler technique was necessary for them

Dr A Fullerton (Batley) said he had his breech cases X rayed, gave them an anæsthetic if necessary for external version, and examined them thoroughly for disproportion at the same time The cause of breech presentation had not been discovered

Prof A H Davidson (Dublin) thought contracted pelvis was not a usual cause of breech presentation but if present was likely to cause trouble and might warrant Cæsarean section He agreed that the legs should be left alone unless the breech failed to advance He thought external version could be overdone and had seen cases of separation of the placenta and prolapse of the cord attributable to it

Dr A Sherwin (Melbourne) agreed that extended legs were *not really a complication*

The President said he believed in the method of bringing down the second arm described by Drs McClure and Macafee in the paper He never gave an anæsthetic for version No one really knew the cause of the faulty presentation

Mr Macafee thought that, like the head, if the breech was engaged at the 36th week it was probably safe He had always found difficulty with the second arm and not the first Anæsthesia for version encouraged the use of force

Prof Davidson showed a coloured film of the operation of *Vaginal Hysterectomy* It was an easy bloodless operation and left no scar, it caused no shock and no post-operative pain If necessary the tubes and ovaries could be removed and a plastic operation on the vagina combined with the hysterectomy It was a quick and safe procedure and he preferred it to radium for treatment of metropathia hæmorrhagica A low spinal anæsthetic was given after morphia and hyoscine, and the parametrial tissues were infiltrated with adrenaline and Novocain In 110 cases his mortality had been 0 9 per cent

In a paper entitled *Posture in Childbirth* Dr Kathleen Vaughan (London) pointed out that delivery had taken place in the kneeling, sitting, or squatting position for thousands of years while the lateral decubitus had only been assumed during the last 150 years If left without help a woman squats for her delivery In this position said Dr Vaughan, there is a lengthening of ½–1 cm in the antero posterior diameter of the brim and of 2 cm in the transverse diameter of the outlet In her opinion the pelvis is the homologue of the thorax and is capable of expansion, in squatting the ischial tuberosities are drawn apart

Mr V B Green-Armytage (London) congratulated Prof Davidson on his results and suggested modifications of technique He regarded Dr Vaughan's paper as setting a new standard of correct teaching of midwifery

Dr F P H Birtwhistle (Barton on Humber) agreed with Dr Vaughan that the squatting position was more natural than the usual position on the side

SECTION OF PHARMACOLOGY AND THERAPEUTICS, INCLUDING ANÆSTHETICS

The second meeting of this section, with the vice president, Prof David Campbell (Aberdeen), in the chair, was mainly devoted to a discussion on the treatment of

Circulatory Failure

Dr J Crighton Bramwell (Manchester), in opening the discussion, compared the circulatory system to a pump drawing from a reservoir With such a mechanism two types of failure were possible (1) where the pump was inadequate, and (2) when the reservoir ran dry The two types were represented respectively by heart failure proper, to which he would confine his remarks, and by peripheral failure The varying demands of the tissues for blood varied between wide limits In health the cardiac reserve was adequate, indeed, as A V Hill had shown, the output might be increased 16 times in exercise, whereas in disease there might be no reserve, the heart being unable to fulfil the demands of the body at rest The resultant failure was shown by dyspnœa at rest Between these two extremes all degrees of cardiac inadequacy were found. Structural lesions of the heart limited what he termed the "basal disability," but other factors more capable of mitigation—such as toxic factors, lack of sufficient exercise, and nervous influences—might severely increase the disability

Dr Bramwell suggested that the term "heart failure" should be extended to include angina pectoris, for pain limited activity as much as dyspnœa did He suggested the term "ischæmic failure" as opposed to "congestive failure" The central mechanism of failure and the indications for treatment, he urged, were essentially similar In treatment complete rest was fundamental. Exercise caused the greatest strain on a weakened heart muscle Everything must be done for the patient he must not attempt to assist his nurses An adjustable bed with proper support was important an upright posture prevented cardiac asthma which was often brought on by the patient slipping down in bed during the night During convalescence graduated exercise and massage were employed to bring the patient back to normal; when convalescence was complete he should remain on a régime calculated to prevent recurrence Moderation in everything should be the rule; an over-sedentary life was harmful and the patient should be warned against this as well as told that he must never run for a train or start his car by hand The nervous aspect of heart failure called for the most careful consideration, especially in the ischæmic type First the hypersensitive patient felt pain more acutely and so was more limited in his activities than the phlegmatic type Secondly he was more liable to get attacks of pain than his more fortunate brother his detonating mechanism lay dangerously near the surface Much could be done to reduce the frequency of attacks by the use of cerebral depressants bromides and luminal This was the only group of drugs effective when given as a routine In acute heart failure caused by auricular fibrillation Dr Bramwell used morphia gr ¼ hypodermically before the first dose of digitalis In paroxysmal dyspnœa and acute pulmonary œdema he used the opiates too It was dangerous to withhold opiates from the cardiac patient The anxiety factor was best combated by sympathy on the part of the physician. It was wise to allow an anxious subject who felt that his business was going to pieces to go back to work as soon as possible. An insufficient coronary circulation was beyond therapeutic measures but the cardiac reserve could be increased by eliminating subsidiary factors such as obesity so that the patient might balance his budget by decreasing his liabilities

Prof K D WILKINSON (Birmingham) spoke of the introduction of digitalis by William Withering some 150 years ago as a more certain diuretic than any then in use Withering used an infusion of the leaves or the dry powdered leaves To-day Prof Wilkinson found digitalis folium digoxin, strophanthin, together with the well known Guy's pill, completely adequate Overdosage was rare and the signs were well known Mass dosage might be necessary but if it was this meant that someone had failed to recognise impending heart failure Where extremely rapid action was necessary strophanthin could be used intravenously in ¼ mg doses This had a rapid action and a correspondingly rapid oxidation so that it was necessary to give strophanthin four hourly for the first day Digoxin ¼ mg might be used instead, intravenously but this had a slower and more prolonged action. In cases of auricular fibrillation Prof. Wilkinson used digitalis pulverata gr 3–4 daily or more or less according to requirements He mentioned that under the digitalis group of drugs the electrocardiogram showed improvement sooner than anything else Digitalis was the most effective of all drugs in the treatment of heart failure Wenckebach had said "I owe my reputation to the fact that I use digitalis in doses the text books say are dangerous and in cases that the text-books say are unsuitable"

Dr S B BOYD CAMPBELL (Belfast) spoke of peripheral circulatory failure as a subject avoided by most cardiologists comparatively little being known about it This was the type of case he was most often called upon to see in surgical wards labelled as "heart failure" Digitalis was useless in its treatment to use Dr Bramwell's simile the well had run dry but the pump was efficient An attempt must be made to increase the blood volume by administering fluids Intravenous saline (isotonic) 500 to 1000 c cm intravenously was most useful; glucose (5 per cent) might be added In very severe cases glucose saline by the continuous drip method might give dramatic results He had seen apparently hopeless cases recover in three or four days with the drip infusion. He found it clinically useful to add 10 units of insulin to the glucose saline infusion He mentioned an extremely severe peripheral failure in a patient with thyrotoxicosis who had recovered after receiving 2000 c.cm of glucose saline with 20 c.cm of collosol iodine and 20 units of insulin In private practice drugs must be given as a placebo in these cases and their mental effect at any rate was good Strychnine caffeine and sodium benzoate and Coramine were the drugs he used personally—they were possibly of some help

In heart failure Dr Boyd Campbell found venesection of extreme value in cyanosed patients He quoted illustrative cases of patients who resisted therapy till 500 c cm of blood were drawn off Venesection should be followed by a course of Guy's pills Acupuncture of the legs was often effective in œdematous cases where digitalis had failed and the practitioner should not be afraid of this method of treatment Pleural effusions should be treated with respect the rule being to take very little fluid off and that very slowly Dr Boyd Campbell praised the mercurial diuretics, Salyrgan and Novurit His own practice was to give 2 c cm of salyrgan intravenously daily for as long as might be required Ammonium chloride was unnecessary as an adjunct

Dr A. R GILCHRIST (Edinburgh) spoke of the dietetic side of treatment The circulation was a sensitive index of the state of nutrition being embarrassed by under nutrition as in anorexia nervosa and much more commonly by over nutrition as in obesity Doctors did not as a rule weigh their patients often enough. Even one stone overweight was of tremendous import to a cardiac patient A definite diet sheet with quantities should be given; it was no use just telling a patient to eat less An average loss of 2 lb per week after a loss of 3–5 lb in the first week was a quick enough reduction. Thyroid was better avoided as it increased the strain on the heart In one case of angina known to Dr Gilchrist the patient was able to go back to work following three years of incapacitating illness after dietetic treatment alone which brought his weight from 17 st to 9 st 4 lb In congestive failure a suitable diet was 1200 to 1500 calories with total fluid 1000 c cm. (milk water oranges) taken in seven small feeds during the day This diet should be practically salt-free since sodium chloride had been found to counteract the action of digitalis An adequate supply of vitamins was important

Dr E P POULTON (London) dealt with treatment by oxygen. He showed the results of several experiments to illustrate that an increased atmospheric pressure lessened the blood content of the thorax and diminished pulmonary œdema The type of case suitable for oxygen treatment was one of definite left-sided failure of the heart with cardiac asthma or pulmonary œdema. He instanced a case where left-sided preponderance had developed following oxygen treatment Arterio-sclerotic patients and those with angina and coronary lesions also responded well Of the available methods, the closed-top tent was the most useful, but it was unfortunately expensive. Open-top tents were more uncertain, as was also mask administration, and the nasal catheter A disadvantage of closed-top tents was that the humidity often rose to uncomfortable heights

Dr GEORGE GRAHAM (London) suggested that pulmonary œdema was due to spasm of the pulmonary veins and advocated adrenaline in doses of between ♏ 15 and $\frac{1}{2}$ c cm in these cases It was important to make sure that the needle did not enter a vein, apart from this, doses could be given safely intramuscularly in pulmonary œdema and cardiac asthma

The PRESIDENT said he had been disappointed not to hear more of the speakers touch on peripheral failure, there must, however, be a time lag between the pharmacological classification of new drugs and their clinical application

Others taking part in the discussion included Dr A FULLERTON (Batley), Prof J H GADDUM (London), Dr A KEY (Portsmouth), and Dr J F COLTMAN (Calcutta), who recommended Pitressin in peripheral failure as well as fluids, the amount of these being controlled by the specific gravity of the blood

Dr NATHAN MUTCH (London) read a paper on the

Therapeutic Uses of Magnesium Trisilicate

In his experiments he used a substance having the formula $H_4Mg_2Si_3O_{10}$ and a diffraction radiogram the same as that of pure synthetic Sepiolite No 1 He deplored the fact that commercial preparations do not always accord with this formula The pure substance had an antacid potency of 1 300, a prolonged and slow action, and strong adsorptive properties It had no deleterious clinical properties even in large overdoses and did not cause alkalosis It could be used for reduction of hyperacidity, for the production of complete anacidity without alkalosis, and for its adsorptive properties in hypochlorhydric gastritis

In reply to Dr E P POULTON the speaker said he was not pressing the claims of the substance as a cure for peptic ulcer, but only as a means of controlling acidity if this were considered necessary

REVIEWS AND NOTICES OF BOOKS

Drug Addiction

By E W ADAMS, O.B E, M.D, a Medical Officer of the Ministry of Health, late Lecturer on Pharmacology and Therapeutics, University of Sheffield London Humphrey Milford, Oxford University Press 1937 Pp 173 8s 6d

A DRUG addict suggests to many a vicious and rather disgusting person who, however wretched his condition may be, has brought it upon his own head Of late years, however, it is being more and more realised that the addict is as much a sick man as is a sufferer from tuberculosis, and often is no more to blame for his affliction This change of view is reflected in the extensive efforts at mass treatment that are being made in parts of the world where addiction is common, especially in China, Egypt, and the United States In this country our drug problem is a small scale one In 1935 our known addicts numbered only 700, against more than 100,000 in the United States, so that a practitioner here may well pass his professional life without coming into contact with one of these unfortunates, and may dismiss the problem as outside his sphere Dr Adams has no such illusions, for he tells us that one-sixth of known British addicts are medical men, and of the rest many owe their plight to the unwise prescription of narcotic drugs by their family doctor Dr Adams, who was secretary of the Ministry of Health committee on morphine and heroin addiction, defines addiction as "a state of bondage to a masterful drug, usually but not always of the narcotic class manifested by craving, tolerance, intense discomfort of a specialised character on withdrawal of the drug, and tendency to relapse" He divides the narcotic drugs into vegetable and chemical, of which the former, which includes opium, coca, and cannabis, and their ever increasing manufactured products, are the subject of this treatise He shows in an historical survey that in Europe, at any rate, the problem began to be serious only after the introduction of morphine in 1804 and of the hypodermic syringe in the 1850's This survey proves that it takes a long time to size up a new drug accurately, a claim that any drug does not cause addiction should be received with extreme caution, seeing that heroin was originally introduced as a harmless substitute for morphine, and that the hopes held out for the newer preparations, dicodid, dilaudid, and so forth have each been dashed in turn Dr Adams shows that addiction affects mainly young male adults, mostly psychopaths, though probably even a normal person may be made an addict by injudicious medication Worry and anxiety are exciting causes, and opportunity and contagion play their part

Dr Adams summarises the various theories advanced to explain the phenomena of tolerance and the abstinence syndrome, and though he has done his best to simplify the theories, this is the one part of the book which the general reader may find heavy going The prognosis of the condition, which he holds to be still bad, is influenced by the type of case, its duration, the particular narcotic used, the mode of administration, and the patient's environment He describes a number of methods of "disintoxication," involving abrupt, rapid, or gradual withdrawal of the drug, many of which proved highly successful when first used by enthusiasts and less so when used later by the more sceptical, but the main difficulty lies in the rehabilitation of the patient Various large scale attempts at prevention are being made by the health section of the League of Nations and other authorities, and intensive search is being made for a morphine substitute that will not carry the danger of addiction Meanwhile the practitioner can play his part by using pain-relieving drugs other than opium whenever possible, by never entrusting a patient with a hypodermic syringe, by caution in ordering narcotics for unstable persons, and by treating efficiently those functional nervous and physical disorders that may predispose to addiction

Blackwater Fever

A Historical Survey and Summary of Observations made over a Century By J W W STEPHENS, M D, F R S, Professor Emeritus of Tropical Medicine, University of Liverpool University Press of Liverpool, London Hodder and Stoughton 1937 Pp 727 15s

THIS is a compendium of data on blackwater fever published during the past hundred years which should prove of great value to present and future investigators of this subject Three-quarters of the volume is devoted to considerations of synonymy history geographical distribution ætiology pathology symptomatology and treatment Relevant information is arranged in chronological sequence and useful tables summarise the observations of different workers on many aspects of the disease The other part consists of a series of appendices which deal amongst other matters with the discovery of cinchona bark and its introduction into Europe The work concludes with an extensive bibliography

Comparative figures indicating the frequency of blackwater fever in different countries are unfortunately not available but Bulgaria, Greece Italy Sicily Russia and Yugoslavia are described as places in Europe where blackwater fever is not an unusual condition Prof. Stephens points out that though cases of blackwater urines recorded by Hippocrates are regarded by some as examples of blackwater fever they do not appear to bear the stamp of that condition The modern history begins in 1858 when Antoniades referred to hæmaturia as a common symptom in intermittent fever following malaria

Those who have studied the literature of this disease will agree with Prof Stephens that until the conflicting mass of statements are harmonised by more precise observation and by the use of modern methods of investigation a complete and accurate epitome of blackwater fever cannot be given

Annual Review of Biochemistry

Vol. VI Edited by JAMES MURRAY LUCK, Stanford University Stanford University P O California Annual Review of Biochemistry Ltd 1937 Pp 708 $5 00

THE annual appearance of this review continues to be an event All the sections are as usual written by specialists and provide also as usual the best available description of that particular subject The date on which the article was received is supplied so that the reader can tell at a glance the exact extent of knowledge at a time which is mostly as recent as the early part of the year of issue A wide variety of biochemical subjects is discussed The section on the hormones by G F Marrian and G C Butler is particularly refreshing in that it goes beyond the ordinary literature on the sex hormones the greater part of the article is devoted to recent work on the cortical hormone and the gonadotropic hormone of the anterior lobe of the pituitary There is also an excellent section on antihormones C C and H C Sherman bring the work on vitamin B up to date and an unusually interesting article on the biochemistry of fish is included. Throughout the book the high standard of previous issues is maintained.

Administrative Psychiatry

By WILLIAM A BRYAN M.D Superintendent Worcester State Hospital Mass London George Allen and Unwin 1937 Pp 349 15s

LITTLE has been written about this rather despised but actually most onerous exacting and important branch of psychiatric work this book would therefore be of interest even if it were less thoughtful, clear and practical. Dr Bryan has a high, one might say an aspiring view of what administrative psychiatry can be and his ideas are based on long experience. After an historical survey and a description of the various forms of control of mental hospitals he goes on to consider how a staff may be built up paying special attention to the nursing problem and the standards of care for the somatic as well as the mental disorders of the patients The organisation of treatment is discussed in three chapters, dealing in a very detailed way with group psychotherapy occupational and industrial therapy and the social worker's contribution In setting this out Dr Bryan shows occasionally an undue partiality for the minutely classified arrangement of plans and duties; but such orderly procedure in exposition is no doubt only another sign of the precision of thought which is characteristic of one type of good administrator In the following chapters teaching coördinated research and the organisation of a child guidance clinic geographically separate from the hospital are the chief topics The book concludes with stimulating chapters on the relationships of the mental hospital with the public, and the possibilities of future development

Diabetes

A Modern Manual By ANTHONY M. SINDONI, Jun M.D Chief of the Diseases of Metabolism at the St. Agnes Hospital Chief Consultant in the Diseases of Metabolism at the Oncologic Hospital Physician to the Medical Dispensary of Presbyterian Hospital, Philadelphia. London McGraw Hill Publishing Company 1937 Pp 240 8s 6d

THIS book is unusual. The first part is devoted to a series of questions by patients and answers by the doctor These questions are sensible and the answers sound, and they relate to problems which physicians treating diabetics have to face sooner or later The second part, entitled What to know gives a very good account of the incidence symptoms diagnosis and treatment of diabetes Treatment with diet alone ordinary insulin, and the complications are carefully described. The actions of the new slow-acting insulins Retard and protamine zinc are discussed in a simple way which should help both physicians and patients to understand their advantages and drawbacks The instructions for the actual injection of insulin are good but the surprising advice is given that the syringe should be boiled every day If the syringe is kept in surgical or industrial spirit it is quite unnecessary to boil it A common mistake is made in describing the nitroprusside test as one for acetone whereas it is far more sensitive to aceto-acetic acid. The food tables are elaborate they give the percentage composition instead of following the English practice of giving the different weights of food which contain 5 g of carbohydrate The recipes are rather scanty The final section entitled What to do gives sound instructions for action in various emergencies

Organization, Strategy and Tactics of the Army Medical Services in War

By T B NICHOLLS M.B Ch.B Lieut.-Colonel R.A M.C London: Baillière Tindall and Cox 1937 Pp 380 10s 6d

AS Sir James Hartigan says in his foreword, an officer of the R.A M.C. who wishes to study the problems he may meet in war or in his examinations for promotion has to extract the information required from many sources. This is not necessarily a bad thing since it drives the student to go back to originals but much may be missed in the process and it is discouraging to those who are slow studies

In this important book Colonel Nicholls has attempted to collate the relevant facts and theories and the result has the approval of the Director General, who “unhesitatingly recommends it to all regular and territorial R.A M C officers ”

The book is in four parts I deals with the organisation and administration of the army in general, II with the constitution and organisation of medical units, III with strategy (10 pages) and tactics (20 pages), and IV gives seven problems, five of which are provided with solutions A minor criticism is that the style of writing is awkward, particularly in the earlier parts of the book, and the meaning is not always made clear The book is practical rather than profound and consists chiefly of lists and summaries, with an occasional (excellent) aphorism references to incidents illustrating the points under discussion might well have been more numerous More serious is the impression left on the reader's mind that the author is looking back to the experiences of past wars rather than forward to future ones This impression is supported by the omission of adequate reference to aircraft in the text The index appears to omit it altogether

Clinical Laboratory Diagnosis

By SAMUEL A LEVINSON, M.S , M.D , Director of Laboratories, Research and Educational Hospitals, Chicago, Illinois , Associate Professor of Pathology and Bacteriology and Assistant Professor of Medicine, University of Illinois College of Medicine , and ROBERT P MACFATE, Ch.E , M.S , Assistant Director of the Laboratories , Associate in Pathology and Bacteriology and Instructor of Physiological Chemistry at the University London Henry Kimpton 1937 Pp 877 45s

THIS book represents the teaching in a course of clinical pathology which has been given for some years at the University of Illinois College of Medicine It attempts to cover the whole field of laboratory diagnosis in terms that will be understandable to the student, physician, and technician. The several sections of the alimentary tract, the viscera, the body fluids, basal metabolism, and hæmatology are discussed in separate chapters There are sections on immunology, general bacteriology and histology, with special chapters on pædiatric procedures, on milk and water analysis, and forensic medicine The authors aim also to include an account of the fundamentals of the sciences ancillary to the study of medicine sufficient to furnish a background for the study of pathological processes, and they provide short descriptions of the outstanding diseases

The general plan of the book is good, but the space devoted to the different parts of each section is not well balanced For example, two thirds of the serology is devoted to tests for syphilis, while in the notes on the serology of the typhoid dysentery group of organisms no mention is made of antigenic variability and complexity in the group There is a 22-page chart of the characteristics of common bacteria, but the student will find little or no indication of which features are of differential importance in this welter of facts The recent work on hæmolytic streptococci is not included, but in another section four pages are devoted to the diagnosis of eight types of pneumococci in sputum In the 114 pages on hæmatology, parasites of the blood, and physical signs and symptoms of diseases as well as technical procedures are included, while many more strictly hæmatological facts are omitted In some places single figures are given for normal values, which in practice cover a wide range, in other places the normal levels quoted vary from page to page The retention of the obsolete system of dividing the anæmias into primary and secondary only leads to confusion, and the illustrations of blood diseases, though numerous, are not good enough

A considerable part of the book is devoted to biochemical methods, mostly standard procedures used in clinical laboratories throughout the world. The Folin Wu system has been largely adopted for blood analysis Several biochemical investigations rarely conducted and of doubtful clinical value have been included, while no mention is made of important determinations such as plasma phosphatase in the study of bone disease and jaundice Some of the methods given are out of date—e g, the thiocyanate method for iron Some of the tests put forward are of questionable value, for example, the microscopic test for silicosis on page 759 is not a satisfactory method of distinguishing dust fibrosis from inflammatory fibrosis

The book in fact has its uses—as a background to a course of lectures—but it suffers from the difficulties common to attempts to coördinate in a single volume the several medical sciences which contribute to the study of pathological processes The greater part of the text is devoted to technical procedures, and there is no room in the remainder to distinguish controversial from accepted theories

Surgical Treatment

Second edition By J P WARBASSE, M D , F.A C S, Special Lecturer in the Long Island Medical College , and C MASON SMYTH, Jun , B S, M D , F A C S, Assistant Professor of Surgery in the University of Pennsylvania London W B Saunders Co 1937 Three vols Pp 2486 £7 7s

THESE massive volumes have been compiled “in the interest of the surgical patient,” but it is not quite clear whether they are intended to instruct the student, the surgeon, or the hospital administrator They deal at length with the planning of operation theatres and with the problems of their ventilation and equipment, and at the other extreme we find chapters devoted to first-aid and bandaging Such matters, which may be understood by a layman interested in hospital management, are mingled with the accumulated experience of two general surgeons in a fashion which suggests that the authors have noted down their impressions of surgical problems as they occurred and have now published them, without any abbreviation or selection, in book form It follows therefore that the work is full of redundancies, and that little distinction is drawn between the major and minor problems Methods long obsolete are included without any indication that they are merely of historical interest, and only the expert can choose, from the large number of operations described, the best surgical treatment for any given disease There are numerous anatomical errors, and the views of the authors on the pathology of many surgical conditions are out of keeping with modern teaching As there are no bibliographical references it is impossible to discover the authorities upon which these views are based, and it is manifest that it has not been possible under the circumstances to keep this large undertaking up to date The book is unreliable as a guide to those starting surgical practice, and it is doubtful whether it has anything to offer to surgeons of experience

THE LANCET

LONDON: SATURDAY, SEPTEMBER 11, 1937

CONTINUITY IN ORTHOPÆDICS

THOUGH there are still a number of local education authorities who have failed to make proper provision for the care of crippling defects, the extent to which orthopædic work has developed in recent years is encouraging in so far as children are concerned. In 1935 some sort of provision had been made in 245 areas, 71 remaining negligent in this respect. No doubt the returns for 1936 will show fewer defaulters. There are, it seems,[1] as many as nine different ways in which an orthopædic scheme may be conducted; the scope and efficiency of any scheme, however, must be ultimately determined by the legislation behind it. The merits and faults of the law as it stands are seen most clearly in orthopædic clinics organised and maintained by a local education authority. Children are referred to the clinic by school medical officers and also (in nearly all cases) by infant welfare officers as well. An orthopædic surgeon visits the clinic regularly to examine patients, to supervise the treatment there given, and to recommend the admission to hospital of the more serious cases. So far as it goes such a clinic works well, but it has serious limitations, of which the most obvious is the lapse of the local authority's responsibility when a child leaves school. This leads to certain difficulties to which Mr. H. J. SEDDON refers[2] in his report for 1936 on the work at the Willesden orthopædic centre. He points out that in a small group of cases observation should be continued long after completion of treatment. Congenital dislocation of the hip is a good example. The dislocation may have been reduced to the surgeon's satisfaction at the age of two, the child may be walking well at five and at ten; but how is his hip behaving when he is fifteen or twenty? Such prolonged observation is not merely of academic interest; it might, and probably would, lead to improvement in methods, though it would be too late to apply this knowledge retrospectively to the individual patient. Another group is in need of continuous observation during the 12–20 age period—we have in mind especially infantile paralysis and scoliosis; the treatment of these conditions cannot be brought within any legal time limit. Continuity of supervision is one of the most important factors in every branch of successful orthopædic practice, and though admittedly the groups of cases specified above form a small proportion of those attending the clinic it is unfortunate for the victims that the present organisation does not allow this principle of continuity to be carried to its logical conclusion.

But there is a greater defect in the organisation. The orthopædic clinic is only open to children attending a welfare centre or a public elementary school; other municipal services, such as provision for the treatment of tuberculosis and for vaccination, the fever and maternity hospitals, and V.D. clinics, are available for all ratepayers. The solution of the particular evils to which Mr. SEDDON has properly drawn attention should be amenable to the broad principle which has been successful in a neighbouring field. Tuberculous disease, whatever the site of the lesion or the age of the patient, is recognised by the State for purposes of treatment. The principle is the same whether the disease is or is not pulmonary; for our present argument tuberculous disease of the joints is most instructive. An orthopædic surgeon attends a clinic in a county borough, which is a recognised authority for treating tuberculosis. He sees cases of joint tuberculosis side by side with ordinary orthopædic cases. Among the first group he is free to treat or follow up a case to any age; in the second official recognition ceases the moment the child leaves school. True, a post-school patient may be dealt with, so far as payment for treatment is concerned, under public assistance, but this entails the drawback that every case has to be considered by the committee on its merits. Why *should not non-tuberculous crippling diseases be* put on the same footing as the other conditions that we have just enumerated? A cripple may not be a menace to society like the patient with pulmonary tuberculosis or venereal disease—but neither for that matter is the patient with a tuberculous joint. He is, however, often a burden to society, to his family, and to himself; financially, too, a persistent burden, for his disease does not as a rule diminish his expectation of life.

The logical step would be to extend official supervision to the crippled or maimed of all ages, not forgetting the manifold forms of arthritis. It will be objected that the cost would be prohibitive. But someone is paying already for the maintenance of people crippled through lack of adequate treatment, or for treatment that is not properly equipped and organised. Efficient handling of children has already banished the more gross crippling defects, and long periods of hospital treatment are becoming less necessary. Such expenditure has come to be regarded as a long term investment, and for young adults the term would still be long. The cost would be diminished by the fact, of which they need no reminder, that local authorities are at liberty to recover part or all of the money spent on treatment from the patient himself or from his family. Whatever may be the derivation of the word orthopædics—and no word in the medical vocabulary has been more misunderstood—the orthopædic hospital and the orthopædic surgeon have long ceased to limit their activities to straightening children. Orthopædics has grown up and the State would do well to recognise its majority.

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[1] The Health of the School Child. Annual Report of the Chief Medical Officer of the Board of Education, 1935. H.M. Stat. Office. Pp. 98.

[2] Annual Report of the Medical Officer of Health for Willesden, 1936, Appendix F.

FOOD AND THE WOMAN

The British Commonwealth League, in conference at Westminster last May, accepted a resolution that it " views with apprehension the fallacious opinion that any woman needs less food than any man" and demanded that " in all tables drawn up in relation to public nutrition the adequate allowance suggested shall not be less for any adult woman than for any adult man" The supreme importance of good nutrition for women is beyond question—it is in fact coming to be regarded as the first step in preventive medicine, but the conclusion that equal quantities of food are necessarily required by the two sexes is not supported by the experimental evidence now available Caloric requirements depend on the person's basal metabolic rate and on the additional expenditure for any activity, and may be computed accordingly Thus for a man between twenty and thirty years old the basal requirements are normally 948 calories per square metre of body surface per day, for a woman they are 888 When allowance has been made for their greater average size men are a little ahead on basal requirements Then there are accepted figures for the additional requirements when the subject sits, stands in various postures, walks at various speeds, works or eats, and for the metabolism during sleep which is about 90 per cent of the basal level The calculation for a day's energy requirements for a man may run like this [1]

Basal metabolism (16 hours)	1152	calories
Metabolism of sleep (8 hours)	518	,,
Allowance for light work	1200	,,
Total	2870	calories
Add six per cent for specific dynamic action of food	3042	,,

The extra calories per hour for different occupations vary considerably For instance, they have been found to be for a tailor 44, for a seamstress 6, for a man bookbinder 81 and for a woman 63, for a housemaid working hard 157, for a man sawing wood 378 Assuming eight hours of work a day, the tailor comes out at 2144 calories per day altogether and the man sawing wood at 4800 Other occupations might be intermediate and clearly for some women the severity of the work would easily outweigh their slighter basal requirements and bring them ahead of some men the demands for energy of the wife engaged in ordinary household duties, scrubbing and so forth, may be greater than those of her husband if his is a sedentary job The fact remains, however, that on average a woman's requirements are less than a man's, the smaller physique and lower metabolic rate being part and parcel of the differences in the make up of the sexes the requirements of a woman are thought to be on average about 17 per cent less than those of a man

There seems therefore to be ample justification for the smaller allowance for women made in most tables of energy requirements, although the differentiation may seem unnecessary when the assessments of total requirements vary so widely It may be for this reason that the League of Nations' technical committee gives only the one figure—2400 calories per day—for an adult, man or woman, not engaged in manual work If the cost of the food required rather than the number of calories had been considered then the claim for equality would have stood firmer, for it is likely that the need of protective foods is as great for a woman as for a man The purchase of the extra energy-bearing items should make relatively little difference to the week's budget

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[1] Physiological Basis of Medical Practice By C H Best and N B Taylor 1937, p 1044

THE PROPHYLACTIC VACCINATION OF CALVES WITH B C G

NUMEROUS attempts have been made during the last six or seven years to vaccinate calves with B C G In this country BUXTON and GRIFFITH [1] made a series of experiments, the account of which was continued by GRIFFITH, BUXTON, and GLOVER [2] These workers obtained by previous intravenous inoculation complete immunity against tuberculous infection by mouth, but found considerable variation in the duration of the immunity Under the conditions of their experiments the duration of absolute immunity ranged from nearly six months up to more than a year Revaccination restored it but complete protection was obtained in a smaller proportion of calves than after primary vaccination Prof A ASCOLI of Milan published a record [3] about the same time as the original British investigation More than 5000 cattle, including 1500 calves, were vaccinated with B C G under carefully controlled conditions without any untoward effects A monograph reporting a new series of experiments on calves, made under his control, and presented to the Italian National Council of Research, has now reached us [4] The investigations were carried out on 94 calves distributed over six different agricultural establishments in the province of Pavia In five experiments the test doses of the vaccinated calves and of the controls were carried out by means of intravenous injections of various doses of virulent bovine bacilli and in two the test dose was the natural one of cohabitation of the calves under experiment with animals suffering from open pulmonary tuberculosis Lastly, a test was made in which vaccinated animals were kept on a farm where natural tuberculous infection prevailed in the cowshed It was found that intravenous and subcutaneous vaccination with B C G as well as with bacilli of the human strain conferred on the animals a substantial degree of resistance, but, as in the case of the British experiments, the immunity produced proved not to be permanent This is, after all, the usual experience with prophylactic vaccines of bacteria in other diseases Vaccination with heat-killed organisms was not a success; indeed, the results of intravenous inoculation of such vaccines in large doses gave reason to think that the remedy was worse than useless, the vaccine exercising a predisposing rather than a protective effect.

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[1] Buxton and Griffith, *Lancet*, 1931 1 393

[2] Griffith, Buxton and Glover *Ibid* 1935 I 451

[3] Ascoli, A *Ann Inst Pasteur* 1931 47 29

[4] Ascoli A, Esperimenti di Vaccinazione Antitubercolare, Institut di Patalogia comparata della Regia Università di Milano, 1936

There is now a considerable amount of evidence to show that calves can be protected for a period extending to a year or even more by vaccines of tubercle bacilli. The insuperable difficulty at the moment lies in successful revaccination. Initial vaccination of the young calf should be a valuable economic proposition if it can be made reliable for routine use, but the essential task for the dairying industry is the protection of the cow during the later years when she is producing milk. So far this difficulty has not been surmounted.

ANNOTATIONS

A NEUROLOGIST'S AUTOBIOGRAPHY

Too many medical men in this country know nothing of Ramon y Cajal except his name, usually mispronounced, coupled with methods for staining axis cylinders and neuroglia. But these, though important, were chance achievements. His fame is based on the more stable foundations of a multitude of brilliant discoveries related to the structure of the nervous system. His most important book, unfortunately scarce and too little known in either the Spanish or the French edition, was practically completed before he discovered his method for impregnating axis cylinders with silver nitrate. It was, as he tells us,[1] the result of fifteen years of solitary work on the nervous system of newly born animals using a modification of Golgi's silver bichromate method. It stands to-day, more than 30 years after its publication, as the most reliable and complete description of the *microscopic anatomy* of the central nervous system. The first (Spanish) edition, limited to 800 copies, resulted in a loss to the author of 3000 pesetas, or nearly as much as his annual salary as a professor of histology. His later important book on degeneration and regeneration in the central nervous system, which has recently been translated into English, was paid for by South American admirers. Both these books are crowded with original observations. Cajal was the first to demonstrate the unity of the nerve-cell from its dendrites to the termination of its axis cylinder and to show the polarity of the neuron. (Waldeyer merely popularised the work and gave the name "neuron" to the theory.) It was Cajal who discovered the basket cells and the finer structure of the cerebellar cortex, the pericellular network to which Golgi's name was later given, as well as other details of nervous histology too numerous to mention. His later work on degeneration and regeneration in the nervous system was undertaken finally to disprove the catenary theory of nerve regeneration which at that time had become undeservedly popular. Thus out of evil came good in that many details of the regeneration of axis-cylinders and nerves were brought to light which are of the utmost importance in *neuropathology*. Outside the field of neurology Cajal discovered the plasma cell, and did important work on the bacteriology of cholera. But his inventive genius was not content with microscopic technique and structure. He was one of the pioneers of photography, and at one time supplemented his income by sensitising photographic plates for amateurs in his neighbourhood. Later he did much experimental work in colour photography and wrote a text-book on its theory and practice. And he tells us how on his visit to the United States he found newly put on the market the disc-record gramophone which he had invented and tried to perfect many years before—a reminder, he says, that "the cobbler should stick to his last," seeing that without skilled technical help such inventions can never come to fruition.

For those interested in the man rather than his work the first volume, tracing his boyhood up to his marriage, will provide the best reading. His ambition and enthusiasm lay altogether in pictorial art, and owing perhaps to parental obstruction of this outlet for his interests Cajal became the bad boy not only of the family but of the village. He was sent away to a school where the discipline was so severe that his parents became anxious for his health under a régime of starvation and thrashing. His career as a medical student was undistinguished except for his anatomical drawings and his devotion to physical culture. He tells several stories of his extraordinary physical strength at this time, but this *was lost to him soon after his graduation as a result* of the dysentery and malaria in Cuba from which he nearly died. Later he found that physical exercise diminished his mental output, and he suffered from many of the bodily ailments commonly experienced by those who make no attempt to balance intense mental work with recreative physical exercise. It is clear that it was the artist's eye and hand that determined his choice of histology as a career, but that he brought to this much more than mere artistic talent is evident in every chapter.

The task of rendering the florid Spanish style into English which preserves its idiom and savour can have been no easy one; for his piety and skill we owe Dr Craigie and his collaborator in translation a debt of gratitude. Cajal's meteoric career, his remarkable achievements, his fine philosophy and his modesty make his autobiography one of unusual interest and charm.

ACCLIMATISATION TO ALTITUDE

A RECENT communication from the Lasker foundation of the University of Chicago draws attention opportunely to our ignorance of the mechanism of acclimatisation to great altitude. There have been occasions in the past when momentarily all seemed clear. The red cell count rises, the oxygen-carrying capacity of the blood is thereby increased, and you have your explanation—until it is found that some people acclimatise well with but a slight, and others badly with a great increase. J. S. Haldane and his colleagues appeared to have solved the main part of the problem with their masterly description of the changes which occur in the alveolar air, and out of this work arose the suggestion that the process of acclimatisation might be accelerated by eating ammonium chloride and thus, by diminishing the available alkali, raising the alveolar oxygen pressure. The suggestion was taken up in several communications by R [illegible] who [illegible] the salt [illegible] In [illegible]

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[1] Recollections of My Life. By Santiago Ramon y Cajal. Translated by E. Horne Craigie, with the assistance of Juan Cano. Memoirs of the American Philosophical Society. Philadelphia. London: Humphrey Milford, Oxford University Press. 1937. Vol. VIII. Two Parts. Pp. 638. 22s. 6d.

Raymond Greene, and Kergin, working in a steel chamber at an "altitude" of 20,000–22,000 feet, showed that the alveolar oxygen pressure is in fact raised by the administration of ammonium chloride The subject of their experiments showed also lessened cyanosis, a slower pulse rate, and an increased capacity for muscular work Now, however, Barron and his colleagues[1] bring forward evidence which, while confirming this work, suggests that the onset of mountain sickness is not dependent simply on arterial oxygen saturation Their conclusions apply only to acute mountain sickness and to non acclimatised persons They administered ammonium chloride to 6 out of 12 men proceeding by motor car to an altitude of 4740 metres, 3 of those who took the salt, and only 2 of those who did not suffered from mountain sickness, in spite of the fact that the former group had achieved a reduction in available alkali roughly equal to that established after partial acclimatisation to about 5000 metres Barron and his colleagues make only passing reference to the unpleasant gastric effects of ammonium chloride, these effects deserve more careful consideration for they may have an important bearing on the results of the tests It would have been better to use acid ammonium phosphate as suggested by Porges, for the phosphate has a far less irritating action on the gastric mucosa The work should obviously be repeated if possible with greater numbers It may not be too late if funds were available, to arrange for a scientific expedition to accompany the Everest expedition planned for 1938 An opportunity of working in comparative comfort at an altitude of 20,000 feet, with a chance of experimental work at much greater altitudes, should not be missed, for should the expedition be successful such an opportunity may not recur

ANXIETY AS A FACTOR IN MANIA

FOLLOWING an urge to simplify which makes for easy thinking and teaching, psychiatrists tend to differentiate a group of constitutional non psychogenic psychoses from another group of disorders which are deemed psychogenic and respond to psychological treatment Mania, especially when it is recurrent or alternates with melancholy, is put into the first category and the neuroses into the second Simple notions may prove to be right, but sharp contrasts seldom do, least of all in psychiatry Mania has long been regarded as the most undeniably endogenous of mental disorders, but as Dr Nils Anthonisen has lately emphasised afresh,[2] the outbreak of a maniacal illness is by no means independent of external "psychogenic" situations, any more than neuroses develop without a big constitutional background In a number of cases which he brings forward, and to which any psychiatrist of experience could add, the manic attack could be recognised as not only the expression of hereditary tendencies but also as a reaction to a complicated situation. He concludes that anxiety, together with a drive to overcome these disturbing factors, is the motivating force during the whole attack, certainly study of any maniacal patient reveals that he is anxious, easily angered, and far from the state of unalloyed happiness which he may loudly profess Indeed, that other sharp contrast so often made—between mania and depression—cannot stand in the face of any careful analysis of the kindred symptoms in these two aspects of the same affective disorder Dr Anthonisen also puts forward grounds for doubting the usual explanation for the form of the psychotic episode, namely, that it is manic if the patient is exposed to a traumatic situation when on the "upgrade," and depressive if he is in the downward cyclic phase, he holds that the "situational" factors may determine whether the illness is to be a manic or a depressive one If the difficulties are such that there is hope of overcoming them, the patient's initiative may be aroused, though with some anxiety about the outcome of his trouble, and a manic attack, the resultant of aggression and anxiety, may ensue This is more debatable matter The psychopathology of the manic attack does not lend colour to Dr Anthonisen's dynamic interpretation of its form, often the hopefulness of a manic patient does not become evident until after the prodromal phase is past, and it may be little more than a deceptive façade, not only for anxiety but also for self distrust and even hypochondriasis and self-blame Such an inquiry as this of Dr Anthonisen has undoubted value It is true that mania, in its "pure" form, is rare, but fuller study of the clinical and psychological features of the illness may shed light also on the commoner mixed forms and hypomanic attacks, as well as on that hypomanic or exuberant type of personality which is so often the mainspring of an active and unusually productive life

MEDICAL RESEARCH IN SHANGHAI

THE Henry Lester Institute of Medical Research in Shanghai has now completed its third full year of work In its recent report Dr J L Maxwell reviews the changes in China's health problems which he has seen since he went out in 1900 Starting with leprosy, during that period Sir Leonard Rogers has developed the treatment with chaulmoogra, and the part played in its causation by concurrent diseases, unhealthy habits of life, and nutritional defects has been increasingly recognised—very different from the days when segregation was the only treatment known The introduction of emetine has revolutionised the outlook in amœbic dysentery The prevalence of the common helminths has only been realised since the research committee of the China Medical Association began its investigations in 1907 Curiously enough, while cleanliness and water-supplies have vastly improved along the coast and in the inland towns, typhoid fever, which thirty years ago was a rarity among the Chinese population, has become one of the commonest causes of admission to the hospitals and at the top of the list of deaths from infections Why this should be is at present obscure Progress has been made in the development of a new curative antityphoid serum, which has been supplied to hospitals in all parts of China Appendicitis has much increased, more particularly in the wealthy city population, possibly from changes in their diet During the last 25 years a licentious soldiery has overrun the countryside and has raised the incidence of neurosyphilis, both by spreading infection and, according to Dr Maxwell by inducing a state of nervous strain in the rural population Scarlet fever has been found to be widely distributed, especially in the north, and to affect mainly adolescents Studies of dietetic defects and nutritional diseases have been carried out in the rural districts and among the increasing number of factory workers in the town. Of the younger factory workers more than half showed signs of malnutrition, mainly from a lack of animal fats and first class protein in their diet Schistosomiasis is endemic in the area around Foochow and the institute has shown that it accounts for the cases of splenomegaly there which had been thought to be examples of Banti s disease. Pathological specimens have been examined for hospitals which needed an expert opinion on difficult cases and material for teaching purposes has been supplied to schools of tropical medicine in England and elsewhere It seems tragic that such valuable work should receive a check We are glad of an assurance that the institute has so far escaped damage and we may hope that Dr H G Earle and his 30 assistants will soon be free to continue their work unmolested.

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[1] Barron E S G Dill D B Edwards H T and Hurtado A *J clin Invest* July 1937, p 541

[2] Anthonisen N L *Arch Neurol Psychiat Lond* 1937 38 71

THE EFFECT OF AN ELISION

THE doctor's honesty and the patient s faith in it which are one of the themes of Dr Cronin's recent book are important factors in the welfare of the community and it was perhaps natural that the *Daily Express* which has republished this book in serial form should comment upon our review of it In the course of this review we said we had learned from a practitioner who came to London as a stranger that he had received a cheque from the first surgeon he called in after buying his practice He returned the cheque the review continues ascertained from books of reference that the surgeon s credentials were not high, and troubled him no more This calm attitude we remarked in the face of an improper proposal, represents that of the average practitioner " In quoting this passage of the review our contemporary incorrectly attributes the story to Dr Cronin s hero and omits to mention the salient fact that the calmness was manifested in the return of the cheque and the discard of the surgeon. The elision is more than unfortunate It is a disservice to the community inasmuch as it suggests to potential patients on the authority of THE LANCET that the average practitioner calmly accepts illicit fees.

POST-OPERATIVE HICCUP

A DISTRESSING type of hiccup sometimes complicates convalescence from abdominal operations The hiccup comes on suddenly in a patient whose progress has been smooth, and in the absence of obvious trouble in chest or abdomen. It is most likely to start when some effort is made, such as getting out of bed for the first time; and once started it is quite intractable persisting day and night unresponsive to remedies Gérard De Muylder in a communication to the Société Belge de Chirurgie, has described two cases which throw light on the ætiology of the condition.[1] In a young girl the hiccup had started when she first got up a week after an operation for chronic appendicitis It was so bad that she could not sleep and could eat and speak only with difficulty and it persisted in severe attacks till the time two weeks later when De Muylder first saw her The least exertion would precipitate an attack As all efforts to find a cause had failed and the usual remedies had had no effect the girl had been labelled hysterical and had been sent home with the suggestion that the hiccup would leave off as suddenly as it had started De Muylder carried out all the usual examinations but got no further till he decided to explore the site of the appendicectomy He found that the great omentum had been pinched in the wound when the peritoneum was being closed and was intimately attached to the peritoneal scar This was no ordinary adhesion, but a definite nipping of the omentum excision of the scar and of the piece of omentum completely cured the hiccup When the same type of hiccup occurred in one of his own operation cases De Muylder naturally explored the wound Each attack was brought on by effort and the last attack which determined De Muylder to operate occurred just as the patient was about to leave the institution, and this time also he found a tag of omentum firmly attached to the middle of the scar It had to be divided between two ligatures before it could be freed but the patient was cured In this case the hiccup had come on nine days after repair of an umbilical hernia and once again it was precipitated by the first efforts to get up In neither case did any sign or symptom call attention to the scar as the cause of the trouble, the wounds being well healed and not tender In the first case De Muylder was almost driven to performing a phrenectomy to relieve the symptoms and explored the wound only on chance

LYMPHO EPITHELIOMATA

EVEN pathology is not immune from the tendency to make fashionable diagnoses. In descriptive oncology for example, the history of the endotheliomata shows what confusion may arise when a new label becomes over popular The term endothelioma was introduced by Golgi in 1869 to describe the psammomatous type of meningioma. Soon other atypical tumours were classed as endothelial in origin, including mixed parotid tumours and tumours of lymph nodes, ovary bone-marrow bones and the intestinal tract. In fact any undifferentiated growth whose primary site was obscure was conveniently regarded as being of endothelial origin and the term fell into disrepute Of recent years there have been attempts to reclassify these endotheliomata, and with the aid of accurate histological technique their histogenesis is shown to be varied. Many are in reality metastases from undiscovered primary growths but in addition certain tumours, such as reticulum cell sarcomata and lympho epitheliomata, have been recognised and show a characteristic morphology However there is still confusion. The first of a series of articles on debatable tumours in human and animal pathology by Harvey Dawson and Innes,[1] dealing with the lympho epitheliomata is thus welcome and if the other projected articles maintain the standard of this the series will be of fundamental importance in tumour pathology

In 1911 Trotter[2] described a series of cases of endotheliomata of the nasopharynx in which the primary tumour was inconspicuous; but the trauma caused was serious, the patients showing either deafness and bilateral cervical lymph node involvement or cranial palsies produced by the deep infiltration of the growth into the sphenoid and base of the brain. Subsequent communications from University College Hospital[3][4] on the clinical aspects of these tumours have continued to call them endotheliomata, but contained no detailed account of their histology though Pilcher[4] has emphasised the extreme radiosensitivity of the type showing early lymph node involvement. In 1921 reports were published from Regaud s clinic,[5] and by Schmincke[6] of tumours termed lympho-epitheliomata in the belief that they arose from those lymphoid organs of the pharyngeal ring in which there is an intimate relationship between the overlying epithelium and the lymphoid tissue The primary tumour was small and seldom showed ulceration , cervical lymph nodes were involved early and, as a rule, bilaterally but remained relatively small and did not ulcerate , the tumours were extremely radiosensitive, with complete disappearance of the primary growth and the lymph nodes under radiotherapy, though distant metastases might appear in the lungs, liver, or bones Histologically the tumour was an anaplastic actively mitosing carcinoma with no tendency to cornification, in which there was little if any demarcation between stroma and tumour , a characteristic feature was the penetration of the tumour masses by lymphocytes, and this was even seen in the visceral metastases It was not suggested that the lymphoid elements had undergone blastomatous change but that the tumour was a peculiar form of epithelioma with a marked lymphotropism in keeping with the features of the normal lympho epithelial organs More recently Ewing[7] and Cappell[8] have described a number of these cases Harvey, Dawson, and Innes in their summary illustrate the histological features of these tumours by a series of excellent photomicrographs They stress the importance of a knowledge of the histology of normal and hyperplastic lympho epithelial tissue, and although admitting the existence of an undifferentiated carcinoma which corresponds with Regaud and Schmincke's description of a lympho epithelioma, they do not regard the lymphotropism as a specific feature, and would be inclined to group all carcinomata of the nasopharynx and tonsils together On the other hand, they note that many so called "lympho epitheliomata," particularly those occurring in children, are really reticulum cell sarcomata , this is undoubtedly true and unless special attention is paid to cytology their differentiation is very difficult Although it is agreed that the lympho epithelioma is only an undifferentiated carcinoma, its clinical characters—small non ulcerating primary mass early bilateral lymph node involvement, and extreme radiosensitivity—are distinctive These characters mark it out from the more differentiated type of epithelioma which shows a liability to ulceration and direct extension to the base of the brain with early cranial nerve involvement In the lympho epitheliomata the primary tumour soon disappears under irradiation, and even in untreated cases it may be difficult to find at post-mortem This has been emphasised by Gräff[9] and a more widespread use of his excellent autopsy technique for displaying the nasopharynx and upper air passages would increase our knowledge of this "debatable tumour"

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[1] *Scalpel* July 3rd 1937 p 970

[1] Harvey W F, Dawson E K and Innes, J R M *Edinb med. J* 1937 44 549

[2] Trotter, W., *Trans. med Soc. Lond* 1911, 34 272

[3] Gardham A. J *Brit J Surg* 1929 17 242

[4] Pilcher R S *Proc R. Soc. Med* 1932 25, 1006

[5] Reverchon L. and Coutard H., *Bull. Soc. Oto-rhin-laryng* 1921 34, 203

[6] Schmincke A *Beitr path Anat* 1921 68 161

THE RELIEF OF PARKINSONISM

THE damage to the brain left by an attack of encephalitis is irremediable, but muscular stiffness and slobbering can often be mitigated so as to make life less irksome to the sufferer The response to extracts of various members of the nightshade family is variable and any of them may fail completely to give relief The tremor and the oculogyric attacks are more resistant to treatment, and, as Sir Arthur Hall has reiterated,[10] under no circumstances does the Parkinson syndrome completely disappear Until recently the best results claimed seem to have been by A Kleeman using doses of atropine up to 20 mg or more a day, after F W Kremer had shown the remarkable tolerance of parkinsonians to this alkaloid During the last two years another preparation of belladonna has sprung into prominence in Germany and Italy From an apothecary's shop in a Bulgarian village it has, with the aid of royal bounty, become well known in Rome and other Italian cities In another column Dr Fenwick and Dr Neuwahl summarise the results so far attained on the continent and give an account of two patients of their own in Rochdale who responded to this Bulgarian treatment when they both failed to get relief from other preparations of nightshade It is possible, as is claimed, that belladonna grown on Bulgarian soil has some special quality , or that its extraction with the white wine of the country may give a more potent extract There is however no type of case in which it is more difficult to assess the direct value of therapy than the highly suggestible parkinsonian The origin in a monastery garden has news value and carries suggestion to the prejudice of scientific assessment We understand from the two Rochdale doctors that Sir Alfred Law has offered free treatment to necessitous post-encephalitic patients in a nursing home Even here it may be difficult to eliminate the factor of mass suggestion , but the need for research, both pharmacological and clinical, is recognised in Rochdale A skilled assessor would help

OXYGEN AND FRESH AIR

THE increased interest now shown in oxygen as a therapeutic measure is reflected in a number of studies of the relative value of different ways of giving it Many of these are unfortunately mere repetitions of previous work which reveal no new facts L Dautrebande and his co workers have recently however[1] brought forward one or two suggestions They measured the oxygen percentage of the alveolar air in trained subjects who were receiving courses of this gas by various channels, and through nasal catheters of different lengths or through a mask The best results were obtained by the use of a mask but when a wide reservoir tube was used the alveolar air was not affected by the length of this tube within limits of 30 cm and 1 metre The concentration of alveolar air was definitely improved by the addition of a 30 cm tube to the mask These results held with a standard flow of 3 2 litres of oxygen per minute, and the mask was still superior at this rate of flow to any of the other methods with flows of 6 3 litres per minute The result with delivery of oxygen just within the nares by means of a bilateral nasal catheter was surprisingly good, apparently more than doubling the oxygen content of alveolar air, the prolongation of the catheters into the nasopharynx making very little difference This held with flows of 3 2 litres per minute, and was also more or less true with increases up to 6 3 litres per minute The increased use of oxygen in this way, however, has an economic side, and in private practice the cost of the oxygen tent, for example, may be very heavy A return, therefore, to the use of fresh air in the treatment of pneumonia in childhood is, on grounds of economy, one to be recommended, and H L Wallace[2] recently described the excellent results obtained in Edinburgh at the Sick Children's Hospital by these means, the method being the simple one of placing the child on the windward side of the ward opposite a widely open window, so that cold air from without plays directly upon the child's face Prof R Degkwitz[3] supports this type of treatment in a recent account of fresh air as employed at the University Children s Clinic Hamburg Broadly speaking he claims that with strictly comparable treatment in all other respects young children kept freely in the open air during their pneumonia had a mortality rate only one third of that when this benefit was not employed In the Hamburg series a particular point was that the children were carried about by nurses in the fresh air for so many hours a day a method which is said to combine the value of fresh air change of position and a certain amount of mothering' Enthusiasts therefore for oxygen therapy might be reminded of these cheaper measures and the medical man who likes to combine instruction with pleasure might well read or re read the description of an adult case of pneumonia treated in the open air with success in Cupid Goes North from the pen of a member of the profession under the pseudonym M Swayne now unfortunately out of print

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[7] Ewing, J , *Amer J Path* 1929 5, 99

[8] Cappell, D F , *J Path Bact* 1934 39, 49

[9] Gräff S *Beitr path Anat* 1934 94, 276

[10] *Brit med J* 1937, 1, 795

[1] *Pr méd* July 21st, 1937, p 1097

[2] *Brit med J* 1937 1 657

[3] *Münch med Wschr* 1937, 84, 1043

THE ADMINISTRATIVE SIDE OF PSYCHIATRY

The socialisation of medicine has in most countries gone to its furthest lengths in the fields of public health and mental disorder The provision of treatment not only for the certified insane but also for those neurotic and other psychiatric patients whose disorder is not of a kind that calls for institutional care has come more and more to be a responsibility of the State as openly recognised and fully borne as the prevention of epidemics The extent of this development in the field of psychiatry is not to be judged solely by mental hospitals though they are still the main medium and concern of public mental hygiene The administration of a modern mental hospital demands some things that would not have entered the head much less furthered the success of an asylum superintendent of the past Many of the essentials for running a mental hospital are of course the same now as formerly but with the development of social psychiatry and of a wider conception of mental disorder the outlook and the functions of the medical superintendent have been enlarged With this growth have come complexities which differ from place to place and certainly from country to country yet the basic problems are everywhere much the same and the recorded experience of a skilled and distinguished administrator in any country can be a most profitable stimulus to colleagues abroad Dr W A Bryan, in a book reviewed on another page shows that mental hospital administration is by no means the soulless stewardship often denounced by enthusiastic workers in other branches of psychiatry The combination of qualities which it demands *is rare* In Dr Bryan s view the functions of the mental hospital are sound clinical practice research, teaching and prevention It has been possible at the Worcester State Hospital, Massachusetts of which he is superintendent to see all these functions working In research especially the hospital has through exceptional circumstances acquired international renown for the unusually ambitious and thorough plan of investigation into schizophrenia carried out there It is not to be expected that in teaching and the prevention of mental illness the achievement could be as notable. Many factors conspire to make this, like research more the work of the university clinic and psychopathic hospital where a wider range of material offers and a closer contact with the rest of medicine and the public can be maintained. Nevertheless even in teaching and prevention the mental hospital has much to do With what most of us would regard as excess of zeal, Dr Bryan sees the mental hospital *of the future as the coördinating agency which will* link up all activities dealing with human beings. Such ambitions overleap themselves More sober prophets will be satisfied if it becomes, more conspicuously than at present, a progressive as well as indispensable part of every organised scheme of public mental hygiene and research

CIRCULATORY FUNCTION IN LIMBS

The last few years have seen an intensive study of the obliterative arterial diseases especially thrombo angiitis obliterans In dealing with these disorders the surgeon is confronted with the difficulty of estimating the circulatory value of the limb—an accurate estimate being important both in choice of treatment and in judging results The symptoms and the ordinary clinical examination will reveal only the grosser changes, and this is true also of oscillometric methods Hence a simple mechanical method that would give a numerical result would be extremely valuable Early last year, in our own columns[1] Simmons of Manchester described such a method making use of a simple ergometer and Ratschow[2] now gives an account of an almost identical apparatus with which he employs similar weights and time intervals The findings closely agree, except that the Manchester clinic used the more powerful group of flexors instead of the extensors and so their numerical results are higher The flexors appear to be the more suitable muscle group for testing purposes for it is nearly always these muscles that are affected in intermittent claudication Ratschow repeats an observation often made that this method is of great value in differential diagnosis from neuritis rheumatism and other conditions and he points out that the work is more easily performed when the limb is dependent This latter observation supports Telford s teaching that the limbs must not be elevated on pillows, but must be as dependent as possible Unfortunately the medical text-book and current nursing practice do not as yet in this respect, differentiate between an arterial and venous thrombosis.

The German school also claims that graduated exercise by means of an ergometer is an important therapeutic agent; but it is doubtful on what grounds this claim is made and it will be interesting later to hear whether it is being maintained

TEETH IN TRISTAN DA CUNHA

Five years ago H M.S *Carlisle* paid an official visit to this isolated group of small islands in the southern Atlantic and the opportunity was taken of making a dental survey of the inhabitants At that time these were found to show a remarkable absence of caries When the ship visited the island again in February of this year the survey was repeated and Surgeon Lieutenant-Commander (D) W E A Sampson who carried out the work with the help of Mr J R Moore of Capetown (the nearest town) has recently published his results[3] In the five-year period the population has increased from 162 to 183 and mainly owing to the efforts of the chaplain education has been greatly improved all children under 10 years now attending school, Ten ships have visited the islands in the last 3½ years a considerable increase over previous years and these

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Simmons H T., *Lancet* 1936, 1, 73

[2] Ratschow M., *Münch med Wsch* July 16th 1937 p 1128

[3] *Brit dent J* July 15th, 1937 p 86

have brought a supply of necessities such as sugar and flour, and a certain amount of luxuries including a few boiled sweets and chocolates for distribution on festive occasions The islanders have also shown more ingenuity in growing fresh vegetables on the island Breast feeding is universal until the age of 12–15 months, and, since the arrival of a consignment of tooth-brushes two years ago, tooth cleaning has been carried out more or less regularly Unfortunately the improvement in the standard of living (and it may be added, the use of the toothbrush) has been accompanied by an increase in dental caries and gingival infections Five years ago 83 per cent of mouths were found to be free from caries and extractions, but this proportion has now fallen to 50 The greater incidence of dental disease has occurred in children and in adults up to 45 years, the older people showing an improvement Five years ago the 22 children under 5 years had no caries at all, 4 per cent of the teeth of this age group are now affected, and at ages between 6 and 13 years there has been a corresponding rise from 0 2 to 1 5 per cent In 1932 only 3 per cent of mouths showed gingivitis, and only 1 per cent pyorrhœa, these figures have risen to 26 and 4 respectively Even now the islanders' teeth compare favourably with those of Europeans

EPIDEMICS OF ANTERIOR POLIOMYELITIS

No circumstance in the history of anterior poliomyelitis is so baffling as its change, during the last two decades of the nineteenth century, from a sporadic to an epidemic disease Epidemics were at first infrequent and relatively small Not until the startling outbreak in Norway and Sweden which lasted from 1903 to 1906 did public health authorities realise the dramatic proportions which the disease might assume Now each year seems to provide an epidemic in some part of the world The increased prevalence and changed incidence of the disease are probably attributable in part to changes in conditions of life The general adoption of compulsory education led to the herding of both urban and rural children into schools, in the present generation developments of a different kind have caused them to flock together in cinemas and other places of amusement to a degree unknown in the last generation, and cheap transport and the development of the holiday habit have led them to travel about much more freely than did their parents, especially from the country to towns or to crowded seaside resorts It happens that some of these factors are most active at what is meteorologically the critical time of the year

In the northern hemisphere the incidence of anterior poliomyelitis normally reaches its peak early in September, and outbreaks of epidemic proportions at this season are to be expected Europe, which has experienced several during the last ten years has so far not suffered seriously this year, and in Great Britain the number of cases reported week by week has not been much above the average, though 40 cases are reported this week (see p 657) In certain parts of Canada and the United States however, epidemics are causing some alarm In Canada the serious outbreak seems to be limited to the province of Ontario, where more than 700 cases had been reported up to the end of August The outbreak is centred in Toronto, where there have been 300 cases with some 30 deaths, 66 cases have been registered at Ottawa Across the border in the United States the maximum incidence seems to have been in Chicago, where over 100 cases were reported during August, and in Buffalo (New York State) In the States as a whole there have been over 4000 cases this summer, in comparison with about 1600 during the corresponding period last year In the southern hemisphere, as in the northern, the incidence of poliomyelitis ordinarily reaches its maximum in the early autumn, that is to say in the months of February and March, though it persists in some degree throughout the winter in all countries A disturbing feature is the report of an outbreak at Melbourne in what is there the winter season, a time when epidemics have hitherto been unknown Epidemics in the cold weather season have certainly occurred elsewhere—one in this country six years ago in November—but always in the early part of the winter, following an abnormally high local incidence throughout the autumn It is to be hoped that this winter outbreak will remain an isolated phenomenon

It is now accepted that the disease is spread by abortive cases and healthy carriers, the infection being harboured in the nasopharynx and transmitted by droplets The only general measures available for limiting an epidemic are those applicable to droplet infections in general Within affected areas children and young adults should be prevented as far as possible from congregating, any child or young adult that leaves the area should be in quarantine for at least a fortnight and, what is equally important, children or young adults should be discouraged from entering the infected area, since epidemics tend to be revived by the influx of new susceptibles Measures of this kind have been taken in Ontario, in various towns of the United States and in Melbourne Where children or young adults sleep in dormitories and camps the beds should be adequately spaced It has been shown for other droplet infections that dormitories in which the beds are close together provide a favourable locus for transmission, and that the critical distance between the beds required to counteract this danger is about four feet The suggestion that in holiday camps and other sleeping quarters where wide spacing is impossible, sleepers should lie "head to foot" to avoid breathing too near each other's faces is one that we should like to see tested by bacteriological methods before whole heartedly supporting its adoption

Various protective measures applicable to the individual have been tried but not on any large scale Local ones range from the washing of the nasopharynx night and morning to the application by means of a spray attached to a special long nozzle, of a solution of zinc sulphate to the olfactory region—a procedure that has given promising experimental results[1] The use of nasal clips or small muslin masks by children during an epidemic does not seem to us practicable Methods of inducing active immunity by means of vaccines are at present under a cloud, but there is less danger in attempts at producing temporary passive immunity by the injection of immune serum Recent experience in America, recorded in the course of a discussion at the July meeting of the American Medical Association[2] is on the whole unfavourable to this method, but in their review of Danish observations G Hardy Eagles and his co workers[3] were unable to rule out its possible value The collection, preparation, and prophylactic use of the serum requires a great deal of organisation, and though it is not beyond the powers of the health departments of the larger cities more evidence of its efficacy would be required before they could properly be urged to undertake the task. We understand that the stock at one time available for distribution from the Western Hospital (L.C C) Fulham is now exhausted

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[1] See *Lancet* July 24th 1937 p 203

[2] *J Amer med Ass* August 7th 1937 p 407

[3] Eagles G H Jensen C, and Henningsen E J *Lancet* 1937 i 462

DR GEORGE SIMMONS

THE death in Chicago of Dr George Henry Simmons at the age of 85 severs a link between this country and medical journalism in America for Simmons was born at Moreton in the Marsh Glos and crossed to America as a lad of 18 to become for twenty five years the guiding spirit of the American Medical Association In fact on his retirement Harvey Cushing referred to him as an example of what America can do for an Englishman if it catches him young enough Simmons certainly had a brilliant career as a medical student at Nebraska University albeit he was eking out a livelihood by journalistic work After qualification he revisited Europe obtained the licence in midwifery at the Dublin Rotunda and visited other centres abroad During the next fifteen years of private practice he founded the *Western Medical Review* and it was not until he was 47 years old that he became secretary of the American Medical Association and editor of its journal. Neither was then flourishing but Simmons's success was immediate and in a period of 25 years the circulation of the journal rose from 8000 to 90 000 and the daughter monthly *Hygeia* had been founded to counteract the influence of the pseudomedical columns in lay journals It is now many years since Simmons's retirement but he may still be gratefully remembered for his contribution to the educational progress of the American medical profession during the first quarter of the century

OPIUM AND CODEINE

AT a recent meeting of the Permanent Central Opium Board at Geneva with Mr Lyall (British) in the chair the statistics concerning the imports and exports of codeine and dionin were scrutinised. These statistics, unlike those for all other scheduled drugs are received only once a year instead of quarterly There is evidence of the growth of the medical use of codeine as a substitute for morphine and the Health Committee of the League of Nations is engaged in an investigation as to the extent to which codeine can give rise to addiction In Canada, since May 1st of this year codeine had been brought under the import certificate system with good effect Nevertheless a demand had sprung up for capsules containing aspirin phenacetin, and caffeine with half a grain of codeine. Addicts it is reported purchase these capsules in quantities and extract codeine from them It may be recalled that in the first draft of the Opium Convention of 1912 codeine was included as a drug of addiction, but, in consequence of objection raised by the German delegates it was struck out In Switzerland and in Poland it is understood that codeine is placed under control similar to that of the other alkaloids

During the examination by the Opium Board of the progress report prepared by its secretary dealing with the statistical returns furnished by the several governments, the Japanese representative pointed out that one fifth of the states were not carrying out their obligations in regard to the returns. In view of the disclosures made to the Advisory Committee of the League of the alarming state of affairs in the Far East as regards clandestine manufacture and illicit traffic it is good to know that Japan has due regard to the fulfilment of responsibilities

The Opium Central Board appears to be in some doubt as to which body is responsible for keeping the contracting parties up to the undertakings to which they are pledged. The Opium Advisory Committee under the Convention of 1915 the Permanent Central Opium Board, under the Convention of 1912 and the Supervisory Body under the Limitation Convention of 1931 would all appear to be concerned and either severally or collectively should apply the necessary corrective to States which default in their international obligations

THE PRACTITIONER" IN BENTINCK-STREET

IN its seventieth year a medical journal should have sown its wild oats and be thinking about a permanent home It is no surprise therefore to find the *Practitioner* settling down at the centre of medical London Nevertheless there is plenty of room for astonishment (as well as for other purposes) at No 5 Bentinck-street W 1 Believing that function should govern structure the directors have built an entirely new house for the journal and they present the profession and the public with a building that is architecturally memorable as well as charming An extra number of the *Practitioner* describes and illustrates it and readers who care for such things—as everyone should—will find themselves eager to see the place for themselves The outside has as is proper a strongly Georgian flavour but is modern enough in detail to justify its association with the interior Once through the doorway the architect Mr Howard Robertson has been able to let himself go—if such an expression is permissible when the going is so dignified His most daring innovation is the large round lift shaft, a circular fluted tower running through the offices to the flats above and this central structure gives character without awkwardness For the better exclusion of noise and dust the offices are air-conditioned in such a way that the air of every room is completely changed every 10–15 minutes The lighting is indirect and the furniture and decorations for which Mrs Howard Robertson is largely responsible are both fine and exciting Even the carpets have been specially made and to complete the period effect of the new building there are carefully chosen glass china, and cutlery

Now at last, writes the chairman we have an office which is the outward sign of what we stand for " The success of the *Practitioner* under the editorship of Sir Humphry Rolleston and Dr Alan Moncrieff is common knowledge and we hope the new surroundings will facilitate the continuance of their valuable work.

IT is announced that Major General W P MacArthur commandant of the Royal Army Medical College has been selected to succeed Lieut General Sir James Hartigan as director general of medical services at the War Office when Sir James completes his term of office next March.

The ninth International Congress for Psychotherapy will be held at Copenhagen from Oct 2nd to 4th Prof C G Jung (Zurich) and Dr Poul Bjerre will give the inaugural addresses The two main subjects for discussion are Psychotherapy in General Practice and Can Psychotherapy be Taught ? Dr Oluf Brüel, 2 Amagertorf Copenhagen K is acting as secretary to the congress

NATIONAL HOSPITAL, QUEEN SQUARE, LONDON —Lord Nuffield who a little while ago gave £5000 to this hospital to build a new research department has now given a further £24 000 for the same purpose

SPECIAL ARTICLES

TWO SCOTTISH HEALTH REPORTS

ADVANCING AGE OF POPULATION

THE Department of Health for Scotland has issued two documents that should provide useful ammunition for the health campaign to be begun by the Government in the autumn. One is a summary of the excellent report of the committee on Scottish Health Services that appeared in June, 1936, and was reviewed in THE LANCET at the time (1936, **2**, 36). The full report, though by no means a bulky volume, may need more time for its assimilation than many busy people are able to spare, and this short summary, which is of special importance to medical practitioners, should be welcomed by all who are interested in health progress.

The summary begins by pointing out that the saving of lives has assumed a new significance from the decline in the birth-rate, which now threatens Scotland with a declining population. The average age has risen from 26·4 years in 1871 to 31·3 years in 1931; and in certain areas the decline in population has for some time been in process and is raising acutely the question whether such areas are able to provide through present administrative units and financial resources the services required by modern standards. Though the death-rate has gone down, and the mean expectation of life at birth has risen from 40·3 years in 1861–70 to 56 years in 1930–32, there is still a wide prevalence of preventable disease. Examination of school-children in a large urban area showed that about 16 per cent. suffered from ailments that could not be classified as minor; every year over 20 per cent. of the insured population are rendered incapable of work by sickness; and of the men medically examined for enlistment in the army 38 per cent. are rejected on medical grounds. The vital statistics of Scotland, it is stated, "are disquietingly less favourable than those of England and Wales and several other European countries." Though the annual cost of the health measures now in operation in Scotland is nearly £20,000,000, it does not represent the whole burden that ill health imposes upon the country.

The report reviews the existing health services and finds them inadequate; they are far from covering the whole ground that needs to be covered and lack unity of methods and direction. Cogent reasons are given for the recommendation that the various services, suitably extended, should be integrated into "a national health policy whose primary aim should be the promotion of health rather than the cure of disease." It is significant to note that in the new system of health services so recommended for adoption a prominent place is assigned to the general medical practitioner, the importance of whose functions, actual and potential, in the service of the community is now becoming more adequately realised. The recommendations are in line with recent developments of health activities: the national physical training and recreation campaign, the health education campaign that is now in preparation, the new maternity service, and the projected Bill for providing medical benefit under the health insurance scheme for young persons between leaving school and attaining the age of 16.

SICKNESS AMONG THE INSURED

The summary of the health services report may usefully be studied together with the latest annual report, the sixth of the series, on incapacitating sickness in Scotland. This report, which covers the year ending June 30th, 1936, affords evidence of a serious increase of certified incapacity for work among insured persons. Though the number of cases of incapacity per 1000 insured persons, 219 in 1935–36, was less than the number, 231, in the previous year, it was higher than the quinquennial average, which was 214. The drop in 1935–36 from the previous year was due to the low prevalence of influenza in 1935–36, when the number of cases ascribed to this cause was the lowest since the present system of recording began in 1930. The number of days of incapacity per insured person rose by 5 per cent., or half a day per person per annum, over the previous year, and was no less than 11½ days, the highest number yet recorded. The total number of working days lost through sickness was 19¾ million, an increase of nearly 2¼ million, or 14·7 per cent., over the average for the previous five years. This is the more remarkable since there was no special prevalence of disease during the year, the incidence of influenza being, as already stated, unusually low. The increase was of course due to the greater average duration of the period of incapacity, which in 1935–36 was 52·21 days as against the quinquennial average of 46·66 days. The increased duration is attributed not to deterioration of recuperative capacity but to the increasing frequency of chronic illness. The average age of the population is rising, and the time lost through sickness increases with advancing age. This is true of both males and females, but at all age periods sickness loss is greater among women than men, the difference being most obvious at ages 20–30 and at ages over 60. It is interesting to note that respiratory diseases form the chief cause of incapacity, the next being chronic rheumatic conditions.

SHOULD THE PANEL DOCTOR CERTIFY INCAPACITY?

The advancing age of the population explains only part of the persistent growth of certified incapacity, which constitutes a problem of national importance. In spite of all said and done about it we still seem a long way from a solution. There are those who attribute it mainly, if not entirely, to the careless issue of incapacity certificates, and who doubt whether certification can fairly be considered a proper function of the doctor attending a patient. A writer in the *National Insurance Gazette* has recently suggested that insurance practitioners should be relieved of the duty of certifying incapacity for work. Their proper function, it is held, is the provision of medical care for the persons for whom they have assumed responsibility and does not include certification. This view has often been expressed in Germany, whereby some societies benefit is not paid, except for bed-ridden patients, without a certificate from a medical referee. On medical grounds the proposal is obviously open to objection. Who can be in a better position to form an opinion on a patient's capacity for work than the doctor in attendance, who has in many cases treated the patient in previous illnesses and knows his reactions to various kinds of strains? In practice, however, the question is not so simple, and it calls for a more searching inquiry than anything that has hitherto been attempted.

PARIS

(FROM OUR OWN CORRESPONDENT)

TUBERCULOUS MENINGITIS

WHAT will assuredly prove a standard work on tuberculous meningitis has lately been completed at the Clinique Médicale des Enfants de Paris to which Prof Nobécourt is attached In coöperation with Dr Sotirios B Briskas he has investigated the behaviour of tuberculous meningitis in this hospital during the 15 year period 1921–35 and he records the results in the *Presse médicale* for August 4th During this period 13 331 children under the age of fifteen were admitted to the general wards of the hospital, and the 344 who developed tuberculous meningitis—diagnosed as such by lumbar puncture and post-mortem examination—represented 2 5 per cent of the total. The incidence differed considerably at different ages: in the first three months of life there was not a single case and during the rest of the first year of life the morbidity was not particularly high it rose abruptly after the first year its maximum being reached between the ages of two and five; from the fifth year onwards there was a fairly steady decline The two sexes were about equally affected, but in the second year of life the morbidity for girls was twice that for boys As for the seasonal incidence it was greatest in March and least in October and the period from April to September showed a higher rate than that from October to March Between 1921 and 1935 there was a decline in the frequency of tuberculous meningitis presumably because opportunities for infection became, on the whole fewer The certain or probable source of infection was discovered in 38 per cent of all the cases and in 51 per cent of those in which the child was less than eighteen months old

CREMATION IN FRANCE

Prof Barrier a former president of the Academy of Medicine presided over this year s meeting of the Société pour la Propagation de l Incinération. The data presented show how small is the place so far taken by cremation in France During 1936 the Paris crematorium dealt with only 940 bodies Strasbourg came next with 200 Marseilles with 61 Lyons with 33 Rouen with 12 and Rheims with only 1 Up to the end of 1936 all these French crematoria had effected a total of 27 808 cremations since they were started—a total that is relatively so small as to be almost negligible

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UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

ACCIDENTAL DEATHS

ACCORDING to a release from the National Safety Council, and an article in the June number of *Public Safety* the number of accidental deaths in 1936 was 111 000 The accident rate per 100 000 jumped to 80·4 which was 10 per cent higher than in 1935 Approximately half the increase it was said was due to excessive heat All types of general fatalities increased Traffic deaths reached a new high total of 37 800 but the rate of increase was not as high as that due to domestic carelessness from which cause there were 38 500 deaths—an increase of 20 per cent. The motor accidents increased by 4 per cent over 1935 Accidental deaths classifiable from an occupational cause reached 18 000 as compared with 16 500 in 1935 Deaths due to such agencies as drownings poisonings and firearms jumped 11 per cent to 20 000 in 1936 The only encouraging feature to be gained from the deaths from traffic accidents was that this increase was only 4 per cent. as compared with an increase of nearly 11 per cent in gasoline consumption which meant 22 billion more miles of travel on streets and highways

The reports state that there were 10 730 000 injured with 400 000 suffering permanent disability The monetary costs have been estimated at $3 700 000 000 $2,000 000 000 in loss of wages $400 000 000 in medical expense $200 000 000 in insurance (not including the amount of claims paid) $820 000 000 motor vehicle property damage and £203 000 000 for fire losses. There are in addition many losses which are more intangible.

An interesting feature of the report was that the returns showed that accidents killed 110 2 men in every 100 000 while the fatalities among women for similar causes were only 46 1 in every 100 000 Among men accidents killed a greater number than any disease except heart ailments Among women, six diseases—heart disease cancer cerebral hæmorrhage chronic nephritis pneumonia and tuberculosis—in that order—killed a larger number than did accidents All of the national increase in traffic deaths occurred in rural districts (including the under 10 000 cities) One third of the traffic moves at night but two thirds of the accidents occurred during this period.

During 1936 the reported percentage in 26 States of the had been drinking participants in fatal accidents averaged 7 per cent for drivers and 11 per cent for pedestrians. Three States classify alcohol as a cause of motor vehicle accidents Illinois reported 8 per cent of fatal accidents to alcoholic drivers and 6 per cent. to alcoholic pedestrians New Hampshire reported 10 per cent for drivers and 6 per cent for pedestrians Arkansas reported the number due to alcoholic drivers at 23 per cent. in 1936

With much increased travelling in 1936 the railroads were able to avoid any increase in passenger fatalities there were 23 in both 1935 and 1936 There were increases in grade-crossing fatalities however and among employees

HUMAN STERILISATION IN THE UNITED STATES

According to reports of the Human Betterment Foundation the total number of official sterilisations in the United States up to Jan. 1st, 1937 was 25 403 including 10 674 males and 14 729 females California which has been the leading State in number of sterilisations, has thus treated 11 484 insane and feeble minded patients in the last twenty-eight years. The total sterilisations represents an increase of 2241 over that announced the previous year The figures however do not include operations in States that do not have sterilisation laws. Twenty nine States now have sterilisation laws the most recently enacted being that of Georgia in 1937 A book embodying a case study of the first 10 000 of the California sterilisations will be published this year and entitled Twenty-eight Years of Sterilization in California.

DEATHS

Dr JOSEPH L MILLER died suddenly on August 6th He was a member of a great many medical societies including the Association of American Physicians and the American committee of the International League Against Rheumatism. He served as editor of the *Archives of Internal Medicine* from 1909 until 1931, and was himself a prolific contributor to scientific and medical subjects.

The death of VERNON LYMAN KELLOGG occurred on August 8th. For many years he was secretary of the National Research Council and as such occupied an active and influential position in American science. During and after the World War he was active in relief work in Belgium, Poland, and Russia. By profession he was an entomologist and he was the author of numerous books on zoology and entomology.

The death of JAMES RAMSAY HUNT brings to an end a distinguished career in clinical neurology. He was director of the neuropsychiatric division of the New York Neurological Institute, professor of neurology at Columbia College of Physicians and Surgeons, and consultant to numerous other institutions. He was the author of many papers on basic and clinical neurology and was a corresponding member of the Société de Neurologie de Paris.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half yearly index.

FROM A LONDON PHYSICIAN

II

THE sufferings of one nation are appreciated by others, not only on the moral but also on the medical plane. The war in China has made ephedrine, a product of the Ma Huang plant, scarce. Thus are British asthmatics penalised by Japanese policy.

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Ephedrine calls to mind pharmacology, a heterogeneous subject disliked by most students, fascinating to a few. The teaching of this subject will be modified in the near future when, we are given to understand, the medical curriculum will be made perfect. Increased stress will be laid on applied pharmacology, which will be taught in the clinical years, while the principles of drug action will presumably be inculcated by preclinical teachers, probably by those wizards the physiologists. Many of the communications to the Physiological Society have in recent years had a distinct pharmacological flavour. Indeed, one or two substances, formerly regarded merely as highly potent drugs, are now claimed as agents of normal function. The old difficulty of definition of the term drug has increased. Is acetylcholine a drug or tissue autacoid or both? A detractor of a famous pharmacologist has said unjustly that the great man regarded as a drug anything which would, when injected into a cat, produce a paper. Fortunately, common sense enables us to draw a rough borderline and to realise that a substance may seem a drug to one man and a hormone to another.

* * *

The exponent of drug action is sometimes regarded with suspicion or even with contempt by some of his colleagues. Dislike and disparagement may be instructive. Thus I have heard a morbid anatomist say that pharmacological data are valueless, because (he said) they accrue from the action of drugs, often of obscure composition, on moribund tissues. I wondered at the time if a tissue could only tell the truth after death, and especially when immortally embalmed in a bottle or when sleeping as a wafer in a paradise of Canada balsam. Truth, whatever it may be, is ample enough to embrace both histology and pharmacology. Admittedly there has been a tendency on the part of the laboratory worker to neglect clinical observations on drug action, but the bias is being corrected. The discovery of ergometrine has shown the value of coördination between clinician and experimentalist.

Some pithy summaries of the effects of drugs are given by Shakespeare. The actions of alcohol as tissue poison, anæsthetic, diuretic, and aphrodisiac are lucidly portrayed in *Macbeth*. In this play also, the ingredients of the witches' cauldron are prophetic of the practice of the blunderbuss organotherapy in which the credulous indulged within living memory.

The Greek word for drug meant also a charm or philtre. It has associations with magic the thought of which excites curiosity. Magic may be white or black, good or evil. F. Bartlett, in a recent review in *Nature* of E. E. Evans Pritchard's "Witchcraft, Oracle and Magic among the Azande," produces some interesting quotations and comments. Magic is a "natural philosophy by which the relations between men and unfortunate events are readily explained," and furnishes these natives (the Azande) with a "ready and stereotyped means of reacting to such events." Are we not as doctors grateful for our patients' stereotyped verbal reaction to their symptoms? The rhetorical question "Is it rheumatism?" often saves us a deal of trouble, even if we prefer the term fibrositis. We must be careful lest, imbued with the philosophy of magic, we accept too readily our patient's rationalisations and miss a case of tabes dorsalis or other serious disease. The Azande are, it seems, capable of treating a festering wound as if caused by witchcraft and by a spear and see no contradiction when both methods of treatment are applied to the one wound. We also treat organic disease by reputedly rational methods and by placebos. The rational remedy is for the patient's wound, the placebo is magic for his troubled spirit.

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The British Association for the Advancement of Science is now in its one hundred and sixth year. At its meeting at Nottingham Sir Edward Poulton has spoken on Darwinism and, I believe, he brought dice into his address as well. Mr. H. G. Wells has dealt severely with the school teachers, and Dr. William Brown is reported to have descanted on the psychotherapeutic powers of dictators. I recall vividly the large part which the teaching of evolution took in the lectures on zoology to which I once listened entranced. The proof of evolution, the geological record, the wars of Huxley against the bishops, his epic cry that the Lord had delivered one of them into his (Huxley's) hands, and a host of other stirring facts and fancies exalted the youthful and impressionable mind. But the first fine careless rapture wears off and one begins to wonder what evolution is all about and whither it is leading. After reading the "Origin of Species" and Huxley's "Essays," I came across a book of which the thesis was that each step forward in evolution is accompanied by a step backwards; this theory seemed at any rate to be applicable to the world of ethical values and also of education. The years which followed the study of zoology were employed in dissecting the highest product of evolution and in examining its physiology as illustrated by experiments on the cat and frog. Strata were piled on strata and the Pleistocene and recent formations of clinical teaching deeply buried the earlier layers. The breezy surgeons and cautious physicians have overlaid the early lessons in science with a mixed crust.

The lungs, formerly regarded simply as an apparatus for gaseous exchange ventilated by the untiring rhythm of respiration and derived by evolution from the swim bladder of the fish, became organs which emitted strange crackles and wheezes. The stomach, embryologically an enlargement of the foregut, became a vessel of dyspeptic misery. In clinical lectures grave references to the relation of indigestion to constipation as being one of cause and effect rather than effect and cause gave one a new line on the alimentary canal. Ulcers, growths and fevers, the labyrinth of neurology, Cheyne-Stokes respiration as a phenomenon to be observed as a dire omen and not as a subject for physiological speculation: these and a host of other things have tended to mellow and perhaps to debase one's outlook. No doubt the new curriculum will make possible a new generation of doctors endowed with the perfect proportions of science and art.

PANEL AND CONTRACT PRACTICE

A Refusal to Reinstate

REMOVAL from the medical list has sometimes stimulated the ingenuity of a practitioner who is reluctant to abandon his panel work. Dr A, removed in 1935 from the medical list of the London insurance committee, deserves full marks for his pertinacity. The ground of removal was fee charging in respect of an insured person about 80 years of age. The medical service subcommittee was invited to consider three earlier cases occurring over a period of ten years; in all three there was a question of financial advantage and in all three Dr A was found to be at fault. He lately applied for reinstatement in the medical list of the Kent committee. The practice concerned was mainly in Kent, but several patients lived in London; the Minister therefore caused inquiries to be made not only of the Kent but also of the London insurance and panel committee.

Dr A, it seems, after his removal from the London list in 1935, continued to be associated with the practice. He entered into partnership with another doctor who secured many of the patients previously attached to the insurance side of the practice. Dr A continued to live on the premises and, according to reports received by the medical benefit subcommittee, it was difficult—if not indeed impossible—to restrain him from intervening in the insurance practice carried on from that address. The partner found the arrangement unsatisfactory and felt obliged to relinquish the practice. Another practitioner, however, took his place and the insured persons were transferred to the new-comer. On investigating the terms of this partnership the committee appears to have found grounds for concluding that the practice remained the property of Dr A, his partner being substantially a salaried assistant who was introduced for the sole purpose of treating the insured persons attached to the practice and who was not allowed any control of the affairs of the practice. So strong was this impression that the subcommittee decided to recommend the committee to make a representation to the Minister of Health that the continuance of the new partner on the medical list would be prejudicial to the medical service of the insured, inasmuch as he could not be absolved from complicity in an arrangement under which in effect he acted as "cover" for Dr A. Before the matter came before the full committee Dr A severed his connexion with the practice and entered into an agreement restraining him from practice at the address concerned or at any place within one and a half miles therefrom for a period of ten years.

A few months later a practice mainly in the Kent insurance committee's area was transferred to Dr X who was understood to be the prospective owner. In June 1937 Dr X produced to the insurance committee a deed of partnership which showed that the new practice was really the property of Dr A and that Dr X, the nominal insurance practitioner, though described as a partner and entitled to receive a fourth share of the partnership profits, was actually living in the house occupied by Dr A. Dr X said that his relations with Dr A had become strained and that he was proposing to leave the practice on June 30th. He would not be in a position, he said, to nominate his successor because Dr A had not indicated whether he had yet found another partner, who would be responsible for the insurance practice. Subsequently Dr X asked that his resignation might be post-dated to August 11th. The postponement was regarded as significant for the purposes of the investigation inasmuch as it was on June 22nd that the London committee learned that the Minister had invited the observations of the Kent committee upon Dr A's application for reinstatement. When the Ministry was informed that the practice included patients in the London area, a similar invitation was sent (as already stated) to the London insurance and panel committee. The report of the subcommittee states that in spite of the Minister's declaration in 1935 that Dr A's continuance on the medical list would be prejudicial to the efficiency of the medical service of the insured, Dr A had, for a considerable part of the intervening period, been the owner at first of his former practice and later, after he had left that address, of another insurance practice. He had been in full control of these two practices except that, owing to his own disability on removal from the medical list, the work had to be done by another practitioner who was more a salaried assistant than a partner. The subcommittee's report sums up the position by suggesting that the abuses of the system of "farming out" in panel practice are bad enough, but that the objections to that system must be all the stronger when the financial advantages accrue to a practitioner who is himself disqualified from insurance service. "Such a state of affairs would render Section 30 of the National Health Insurance Act nugatory and would, we think, bring the administration of medical benefit into contempt."

In the circumstances it is hardly surprising that the committee expressed itself as remaining strongly of opinion that the inclusion of Dr A in the medical list would be prejudicial to the medical service of the insured, and the Minister has now refused his application for reinstatement

Refresher Courses

The Minister of Health is now prepared to approve grants to enable insurance practitioners to attend, under certain circumstances, short courses of post graduate study Normally the course will consist of intensive study in general clinical subjects and will occupy two weeks full time These courses will now be available to practitioners other than those practising in rural districts and will not be subject to any inquiry as to the practitioner's income Grants will be payable in respect of courses approved by the Minister after consultation with an advisory committee representative of the Insurance Acts Committee The conditions under which a practitioner becomes eligible for the grant have already been set out in this column (p 472) A grant will cover the following items

(1) A fee for the course not exceeding five guineas (unless a higher fee is specially sanctioned by the Minister) as fixed by the medical authorities This fee will normally be payable directly by the Minister to the medical authority providing the course

(2) Third class railway fare or its equivalent

(3) Subsistence expenses incurred, not exceeding five pounds per week, where attendance at the course necessitates the practitioner sleeping away from his residence, and not exceeding one pound a week in other cases

(4) A sum not exceeding eight guineas a week inclusive in respect of the engagement, where necessary, of a whole time locum tenent

The insurance practitioner desiring to avail himself of these facilities should apply to the secretary of his panel committee, and when his application has been approved he will receive from the Ministry of Health a voucher for production to the authority providing the post-graduate course In the immediate future courses each lasting a fortnight will be held at the British Postgraduate Medical School, Hammersmith, beginning on Sept 20th, Oct 18th, and Nov 15th There will be 13 vacancies in the first course, 20 in the second, and 25 in the third Details of other courses will be issued later in the year

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Capt F C Wright to *St Angelo* for *Maine*

Surg Comdrs J Wyle to *President* for Medical Depôt, Deptford, C E Greeson to *Royal Oak*, and T J O'Riordan to *Cumberland*

Surg Lt Comdrs D F Walsh to *St Angelo* for R N Hospital, Malta, A L Moorby to *Drake* for R N Hospital, Plymouth

Surg Lt Comdr V J Fielding placed on Retd List at own request

Surg Lts G C Denny to *Pembroke* for R N B, T A M Maunsell to *Ramillies*, and R M Kirkwood to *Rodney*

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt J L Dunlop to R N Hospital, Haslar

Surg Lt (D) J W W James to *Victory* for R N B

Proby Surg Lt G A Hart to be Surg Lt

ARMY MEDICAL SERVICES

Maj Gen W P MacArthur, D S O, O B E, K.H P, has been selected to succeed Lt Gen Sir James A Hartigan, K C B, C M G, D S O, K H.P, as Director General of Army Medical Services, when the latter completes his tenure of office on March 1st, 1938

Col A N Fraser, D S O, late R A M.C, retires on ret pay

Lt Col P S Tomlinson, D S O, from R A.M C, to be Col

ROYAL ARMY MEDICAL CORPS

Lt-Col R C Paris having attained the age for retirement, is placed on ret pay

Maj and Bt Lt Col E B Marsh, M C, to be Lt Col

Maj C Armstrong, M B E, to be Lt Col

Maj S Fenwick, M C, h p, late R A M C, retires on ret pay

Temp Commissions—Capts to be Majs J D Dillon and R S de C Bennett

ARMY DENTAL CORPS

Col D Clewer to be Dir, Army Dental Serv, War Office

Maj T K Place to be Lt Col

Short Service Commissions—Lts to be Capts W K Eyles, S G Gourley, J A M. Gemmell, and J E Mawhort Lts (on prob) confirmed in their rank C H James, W H Burndred, S A Nicholson, and S J Gittings

ROYAL AIR FORCE

Flight Lts D W I Thomas to No 8 Armament Training Camp, Evanton, and R A Cumming to R A.F General Hospital, Iraq Hinaidi

INDIAN MEDICAL SERVICE

Lt Col A C Munro to be Col

Lt Col D L Graham, O B E, retires

A D M S—Col A A McNeight, *V H.S*, I.M S, has vacated his appt and Col A C Munro, I M S, has been appointed

Indian Medical Department—Maj (Sen Asst Surg) A N de Gruyther, M B E, retires

DEATHS IN THE SERVICES

Major **Archibald Donald Mackinnon**, C.M G, who died at Hove on Sept 5th, in his 73rd year, was the son of Donald Mackinnon, D D, Minister of Strath, Skye He was educated at Aberdeen, qualifying in 1887 and taking the M D in 1892 He was medical officer for Uganda Protectorate 1894–97 and later to the Sultan of Zanzibar (who awarded him many honours) and the Imperial British East Africa Company In the European war he was employed on special duty in 1917 with the rank of major He was created C M.G in 1900, and O B E (Mil) in 1919 His home was at Kyleakin, Skye, and he was a county magistrate for Inverness

THE LANCET 100 YEARS AGO

September 9th, 1837, *p* 873

From a leading article on "Verba Consilii, or Hints to Parents who intend to bring up their Sons to the Medical Profession," by W H Denham, F R C S

The approaching month of October—celebrated in the calendar of British Medicine—brings with it the occasion for many anxious thoughts in the bosoms of hundreds of parents, in the life of whose sons a new era is about to commence On the motives which should guide a parent in assigning a son to pursue the study of medicine, Mr Denham offers the following excellent remarks —

"But before parents come to a determination to enlist a son in the ranks of the medical profession, it is of the utmost importance that they should satisfy their minds that the mental capacity of the boy is so constituted for imbibing draughts at the fountain of knowledge, as will fit him to undertake the important task that he will be called on to perform Unless they are satisfied on this point, the sooner they relinquish the idea of making him a surgeon the better, for, without such capacity, the exertions of teachers, and their own trouble and anxiety, as well as their money, will be sadly misapplied There is another preliminary circumstance which parents should also well consider, their son ought to be of that hardy frame of body, that he will, as far as probability goes, be able to bear the excessive fatigue and watching which, to a certain extent, fall to the lot of every medical man, of every country practitioner in particular If he be not, however intelligent he may be, I would earnestly advise them not to make him a surgeon, for, unless the *mens sana* have its domicile *in corpore sano*,—unless he be healthy and hardy, wofully severe will oftentimes be his labour—frequently more than he will be able to perform, without risking the destruction of his health "

CORRESPONDENCE

HEALTH OF MEDICAL STUDENTS

To the Editor of THE LANCET

SIR,—The eminently wise and timely leading article in your issue of August 28th invites certain comments which I hope you will allow me to make

(1) You rightly draw attention to the circumstance that the curriculum as at present imposed exacts practically double the duration of study of that which obtains in most other professions Let me cite a concrete case —

> A colleague of mine in the House of Commons entered the House as secretary of a great trades union After some years of membership he decided to qualify as a barrister while retaining his membership of the House He was called to the Bar within two years of commencing his legal studies and immediately secured briefs from the trades unions and other sources in such measure that he contemplates making law and not politics his career

Such a metamorphosis would be impossible in medicine The medical student spends from three to four years (taking into account the new requirements for registration) in the study of the sciences which are necessary to the understanding of medicine This, as you say is in effect graduation in science I have endeavoured without success so far to secure for the London University student of medicine the right to rank the second M B examination as qualifying for a degree in science to which at London University it is equivalent in range and standard With the exception of a few universities—e g Oxford Cambridge Dublin and Manchester—no facilities are provided by which the medical student who has had scientific training which ought to qualify him for a degree in science can in fact achieve that degree and this is a grievance which should be remedied

(2) But the most important and valuable contribution which your leader makes is to call attention to the strain on the health of the medical student entailed by what is practically continuous study for an average period of from six to seven years without a break, in an atmosphere which too often must be regarded as unhealthy particularly in the latter clinical, stage which he is required to spend at a hospital This part of your editorial was the subject of a leader in the *Times* of Sept 1st, which remarks that, a burden of responsibility rests upon those to whose hands the education of medical students is committed.

A recent correspondence in your columns has shown that this responsibility is shared by so many bodies that almost no control is or can be exercised. That this is the position is demonstrated by the lamentable failure to deal with the scandal of a swollen medical curriculum crying out for diminution and actually receiving extension because nobody is courageous enough to make a stand against quite impossible demands The General Medical Council, which ought to have the power of control and as I believe has the statutory sanction has become a subservient servant of the medical schools which openly scoff at its authority I have recently pointed out in your columns that the new curriculum formulated by the General Medical Council, to become operative next year will make it necessary for the medical student in the last three years of his course—i e , the hospital period obviously most exposed to infection and strain—to forego his vacations entirely The relevant resolution says explicitly that during these three years "clinical instruction should be continuous —for twelve months in each year !

Prof Leathes in your issue of July 10th writing as chairman of the educational committee of the General Medical Council excuses this transformation of academic into calendar years by the statement that this continuous study 'in London medical schools has been customary for at any rate more than fifty years ' You have shown how great was the toll of sickness in these schools in the recent past and the custom if it indeed exists which I question is bad. But the custom has been no more than a voluntary and partial sacrifice of vacations which is a very different thing from a compulsory and universal enforcement imposed on all the schools in Great Britain

An editorial in the current issue of the *British Medical Journal* points out that for the minimal registrable qualification a minimal period of 57 months training is exacted under present regulations, and goes on to point out that this assumes that the student must keep in good health through every term and never fail at a single examination These conditions are seldom if ever realised and the average period of study for the minimal qualification is nearer six years than five and for a university degree nearer seven years than six With the proposed new compulsory appropriation of the long vacations in the last three years of study the position which your leader deprecates will become the rule and the break which you would make compulsory in the interest of the health of the student will in fact be rendered by regulation impossible of achievement throughout the clinical period Moreover the additional burden placed by the new curriculum upon the student in the pre-clinical period will inevitably result in a sacrifice of vacations in that stage also

The final irony of this deplorable situation is the increasing dissatisfaction both lay and professional with the outcome of all this desperate effort attended as it is by such great and intolerable strain upon the student Clinical teaching for so long the pride of English medicine has been largely sacrificed to pseudo-scientific claims Prof Johnstone at Belfast said quite truly that under present conditions nurses receive a much better clinical training than medical students and the leader in the *Times also condemns* the neglect of clinical teaching resulting from the overloaded curriculum in a weighty paragraph with which I shall close my letter —

> Must the minds of students be crammed with information which is contained in all the textbooks ? The more some modern systems of professional education are examined the stronger the conviction grows that apprenticeship to a practitioner the earlier method of training possessed advantages which have been too lightly surrendered Indeed it may well be that the natural order of procession towards efficiency and skill has been reversed and that sooner or later it will be necessary to go back. Most doctors assert that their knowledge was acquired not during but after their student days Without accepting such statements in too liberal a sense it may be well to weigh their implications. Men seek special knowledge eagerly when they have learned from their own experience that they have need of it Until that time comes the ingestion of knowledge is usually of small avail and as now appears may impose too heavy a burden upon mind and body

I am Sir yours faithfully

Sept. 5th　　　　E GRAHAM LITTLE.

To the Editor of THE LANCET

SIR,—The opinions quoted *by the Times* from your leading article of August 28th suggest that in some quarters an exaggerated view is held of the strenuousness of the life led to-day by medical students. The fact, for example, that at the beginning of this century a group of hospital residents contracted tuberculosis cannot fairly be taken to reflect on modern conditions of hospital life

The medical curriculum makes, of course, considerable demands on the student's time and energies But when, recently, I got one of my colleagues to select 100 students and to ask them for their personal views on this particular point, almost all of them, to our surprise, expressed the opinion that they were not overworked When I look at the question dispassionately I agree that they do not have to work too hard and that an exaggerated and rather sentimental view is taken of the whole matter Students certainly do not have to work as hard as a general practitioner or (if the comparison may be allowed me) as the dean of a medical school, especially if he combines that office with consulting practice

The question whether the health of students generally is adversely affected by their work is difficult to answer as facts are few and impress ns (which may be misleading) are numerous It is will the object of investigating this point that there the en established in this medical school a studen a service But the following figures are intere uivalent ring the past ten years, 1028 students have not exceedi Bart 's, 10 of them died and 8 failed t at the course igh ill health Of the 10 deaths 6 were from his resi idents The number of those who had to r other cases e study of medicine owing to ill health was a week sary, emarkably small

The facilities afforded to the students for exercise are numerous There is little teaching on Wednesday afternoons and none on Saturday afternoons, which gives greater opportunities than are available in many other walks of life There are five rugby football teams, two association football teams, two hockey teams, two cricket teams There is an active boxing club, a fencing club, an athletic club, a boat club, a lawn tennis club, a fives club, and others Our school has a gymnasium, two squash rackets courts, two fives courts and cricket nets in the hospital grounds Apart from all this many students, living some little distance from the hospital, have plenty of opportunities of joining clubs not connected with the school Further, a swimming pool is to be included in the development scheme now under consideration, but a large number of our students already avail themselves of a swimming bath in another school

These, or similar facilities, are to be found in most medical schools, and it cannot therefore be said that the students have not opportunities for exercise Whether they utilise them to the full is of course their own concern In writing thus I do not wish to make it appear that the student's life is an easy one, for it is not so But I am sure that there is a tendency to exaggerate the difficulties and I do not believe that the strain on any normal student is such as to endanger his health

I am, Sir, yours faithfully,
W GIRLING BALL,
Dean of the Medical College St Bartholomew's Hospital.
Sept. 7th

ITCHY RASHES DUE TO RABBIT MITES?

To the Editor of THE LANCET

SIR,—The autumn months are responsible for various itchy rashes, and a minute acarus, *Leptus autumnalis* may be the cause Usually the sufferers are hikers or golfers who have walked in long grass, and the South Downs are well known to be infested The irritation begins in about six hours and may last a week The covered part of the legs is usually affected

The experience of two medical women last week-end may be of interest They rested on the short dry turf in a place called Kingley Vale, Surrey, but after an hour decided to move on account of a slight skin irritation. Both during Sunday night began to suffer from intense irritation on the shoulders, back, and thighs The legs, arms, face, neck, and the exposed V-shaped arch on the chest were not affected The irritation continued all Monday, was slightly better after baths and calamine lotion, but Monday night was sleepless and fresh intensely itchy papules appeared round the waist and thighs

When I saw one of them last Tuesday the irritation was still severe and the covered parts of the body showed small excoriated erythematous papules No burrows were found and microscopic examination of scrapings showed nothing A Collosol Sulphur bath and complete change of clothing gave immediate relief, and the rash disappeared in a few days In several of my cases the sufferers have not been anywhere near long grass, but all agree that rabbits obviously inhabited the locality It occurs to me that some of these cases are due to a rabbit mite Can any of your readers support this explanation or suggest another?

I am, Sir, yours faithfully,
FLORENCE SHERRY DOTTRIDGE
Harley street W, Sept 4th

HOSPITAL PENSIONS

To the Editor of THE LANCET

SIR,—It is a matter of grave concern that hospital funds should be free from perversion or waste With this in view I propose to deal with the subject of pensions After ten years' experience of its working an extension of the superannuation scheme which now prevails in London and other hospitals is being officially contemplated Assuming the need of some system of superannuation for hospital servants I doubt whether the scheme now in vogue is economical and appropriate

In considering the scheme on its merits, one must recognise the advantage of having benefits interchangeable between the "participating institutions" (i e, the hospitals, &c, members of the parent organisation[1]) so that a nurse, for instance, leaving one hospital for another, does not forfeit any vested interest, and this applies even where the change is from a hospital to private nursing This is made possible by insurance offices undertaking the financial part of the work The necessary fund is created by a deduction of 5 per cent from an officer's salary and a grant of 10 per cent by the hospital May I first point out the nature of pensions in other cases? It is to continue a stipend, generally at a reduced figure, after the agreed age of retirement, and to meet an intermediate necessity, arising from abandonment of service, consequent upon ill health or other incapacity A servant who resigns voluntarily forfeits any advantage from the scheme To some extent the benefit is reciprocal, as a vested interest in an impending pension induces the holder to remain in employment, which may be a valuable asset to the employer Further, the legitimate office of a pension is to benefit the individual, giving him the advantage of a guaranteed income for the rest of his life The object should not be to endow his dependents or relations and certainly not strangers, as nominees it being left to him to exercise with that object in view such frugality as he would have done in the absence of a pension It is true that civil service practice primarily established upon this plan has been so far modified that the servant upon his retirement may elect instead of the benefit being entirely an annual payment to him to be paid a certain proportion as a capital sum—but that is the only exception I know of

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[1] The superintending organisation is incorporated under the Companies Acts under the cumbrous title "The Federated Superannuation Scheme for Nurses and Hospital Officers (Contributory)" which, mercifully may be referred to and known as "The Central Council"

Now as will be seen the hospital scheme has not primarily a pension but an insurance effect and in place of the simplicity of the former the latter plan can only be gathered after intense study of literature of the most appalling complexity issued by the Central Council The scheme provides a choice by the servant of two forms of benefit (1) deferred annuity policies and (2) endowment assurances The former secures at maturity an annuity or a single cash payment and provides for a return of all premiums with compound interest in the event of termination of membership or death before maturity With regard to death there could hardly be a provision more inconsistent with a pension scheme than that a substantial sum should be paid to the representatives of a deceased officer There is certainly the possibility of a pension if the member should so choose upon maturity but the alternative of a lump sum is to be deplored. A nurse or other unsophisticated servant may easily be tempted to embark the lump sum in some wild-cat scheme with the result that she may become penniless in the end How many defunct poultry farms are there owing to retired officers commuting their pensions ? It is fair however to recognise that in the scheme there are some rules whereby the participating institution may exercise some control as to the application of the proceeds of policies but even if such legislation is effective it is a bit of official interference with the private concerns of an individual Superfluous litigation is here made possible for the decision of one participating institution on the matter is not, it seems sufficient for there is provision for a series of appeals from the primary decision culminating in the nomination of "a single arbitrator by the President of the Law Society

How easy would it be to avoid all such complications by conferring only a genuine pension that is a regularly paid annuity ! No one would begrudge a liberal grant in the case of a nurse for example who is compelled to retire in consequence of ill health but under the scheme a nurse who voluntarily retires to contract a brilliant marriage or a secretary who leaves hospital service to better himself has the same advantages as the incapacitated Instead of the inducement for a secretary to remain as there would be in the ordinary practice of pensions he is offered a substantial bonus when he departs After he has been subject to the scheme for 10 years for instance his salary being (say) £1000 a year he would be entitled to receive not only the 5 per cent deducted from his salary but the 10 per cent paid annually from the hospital funds amounting to £1000 money subscribed by the public for the sick poor

The alternative choice of endowment assurance secures a single cash payment on death before maturity or on survival to maturity with the option of taking in lieu of cash payment an annuity at guaranteed rates and is even more inconsistent with a real pension arrangement Notwithstanding the full discretion given to a member to choose between the two plans it was felt that some advice should be given, and it is laid down that benefit (1) is usually more suitable for a nurse or woman officer and benefit (2) for a married male officer

That being headquarters opinion it is to be regretted that nurses at any rate should not be protected from deciding that a (so-called) superannuation fund should be diverted for the purpose of enriching kin or others at their death Under benefit (2) there is the same absence of distinction where intermediate abandonment is voluntary or on account of incapacity I will give an illustration of abuse arising from the scheme

> A female officer chose to adopt benefit (2) Six years afterwards she was so ill that she had to abandon her employment and go to hospital, where she died a year later Being unemployed in the meantime no money was available for the quarterly premiums of £10 1s but to save the policy from compulsory surrender some considerate persons advanced the premiums and so kept the policy alive Otherwise all that was due to her was the surrender value of £250 ; actually £1302 17s the value of the policy was paid upon her death by the assurance society By her will the officer left £200 to a relation and the residue to her fiancé with the result that an individual in no way connected with the hospital was enriched to the extent of over £1000

Such a scandal may be often repeated. An officer might leave the whole policy benefit to his paramour to the exclusion of his wife and family or (more innocently) to the National Society of non-smokers the League for prohibition of cruel sports or to homes for lost dogs Meritorious as these objects may be the money was not subscribed for them but for the sick poor

Again the cost of civil service pensions is only 10 per cent of the yearly salary a scheme of the education department costs only 7½ per cent., a hospital is now running its own scheme at a cost of 10 per cent Compared with this the 15 per cent cost of the superannuation scheme seems excessive. Is not the excess due to the introduction of the inappropriate life assurance element ? It is difficult to understand how it is that committees of hospitals and kindred institutions constituted as they are of persons of high standing and distinction, should have agreed to saddle their establishments with the burden of so extravagant and incongruous a scheme as that in force The remedy seems to be that *if a hospital* chose to adopt an orthodox pension scheme the Central Council should allow the principle of interchangeability to apply

I am, Sir yours faithfully

Junior Carlton Club Sept. 2nd. FREDERICK MEAD

SCURVY AND CARDITIS

To the Editor of THE LANCET

SIR,—In a previous communication I showed[1] that scurvy experimentally produced in guinea pigs resulted in a diffuse carditis with valvular lesions and that if the scurvy were maintained in a subacute state for some months congestive cardiac failure resulted. I failed to find any very definite correlation between the pathology of the scorbutic carditis and rheumatic carditis Cardiac failure has been recorded in children dying of scurvy[2] but it is not a usual finding

By good fortune I recently chanced to meet a South African colleague who while working on a mine in Southern Rhodesia saw more than 200 cases of scurvy in adult negroes I at once asked him if any had shown signs of rheumatic carditis He stated treatments carried out at Cardiff and Runwell must by now amount to several hundreds, and no fatalities have occurred At a number of other hospitals in this country (vide the annual report of the Devon Mental Hospital, 1936) and abroad the modification has been introduced with success and no one has remarked on the deleterious effect of insulin Dr Menzies, however, has failed to complete the course of narcosis in a number of cases and has had to resort to Coramine in three of them I think a fair explanation of Dr Menzies's failure with the insulin modification (six cases only) will be found in my letter in your issue of April 4th, 1936

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[1] *Lancet*, 1937 1 973

[2] Erdheim, J., *Wien klin Wschr* 1918 31 1293

There are many other points with which most psychiatrists would express disagreement—e g , the giving of the injection at fixed times, the supposed amnesia on 2 c cm of somnifaine per day, and the grouping of patients into classes from the point of view of tolerance, when each case should be studied on its own merits

Somnifaine narcosis has gradually established itself as a valuable form of therapy, and every psychiatrist who has given it a trial would welcome a technique rendering it even safer Until the theory of *disturbed carbohydrate metabolism* has been disproved by careful clinical and biochemical investigations, or some new utopian narcotic discovered, nothing can be gained by omitting the administration of glucose and insulin

I am, Sir, yours faithfully,
R STRÖM OLSEN

Runwell Hospital Wickford Essex Sept 6th

AN INFORMATIVE LIPOMA

To the Editor of THE LANCET

SIR,—I should like to report a rather curious phenomenon which I came across recently An elderly man, suffering from old standing pulmonary tuberculosis of the fibroid type, attended at one of my sessions at Stepney Dispensary Situated just above the left elbow joint and on the anterior aspect of the arm was a lipoma of about the same size and shape as a well developed female breast When I commented on this, he informed me that it was to him an infallible guide as to whether he had gained or lost weight—distinctly varying in size At this particular attendance he had actually gained a pound or two and told me he knew it without reference to the scale Truly a fatty reservoir

I am, Sir, yours faithfully,
DENNIS G HAMILTON

St Mary Abbots terrace W Sept 5th

REGIONAL OR DISTAL ILEITIS

To the Editor of THE LANCET

SIR —In your issue of June 26th last I called attention to the early reports of cases of terminal ileitis by Combe and Saunders (July 4th, 1806), and by John Abercrombie (patient seen in 1814, reported in his book 1828) An interesting editorial on "regional ileitis," appearing in the *Journal of the American Medical Association* for July 31st, leads me to call attention to several additional references, and particularly to the report by T K Dalziel of Glasgow, on "chronic interstitial enteritis" (*Brit med J* 1913 2 1068) Dalziel saw the first of these localised cases of chronic ("hyperplastic") interstitial enteritis with Prof Gemmell in 1905, and of particular interest is the case of a child of ten, showing great thickening of the ileum, middle section of ileum was removed Dalziel operated upon a professional colleague in 1901, suffering from obstruction of the bowel, colic, &c , and found "rigidly fixed gut" at the operation He also mentions a lady patient of Dr Revie, of Kilmarnock, suffering from regional ileo colitis , a colostomy was done on the right side by Dalziel No tuberculosis was present Seven out of nine cases recovered after operation (resection of large portions of the intestine)

Of interest in this connexion are the following publications —

Le Dentu Faux cancers et tumeurs inflammatoires du ventre, *Gaz méd Paris*, 1909, No 50, p 5 , also *Bull Acad Méd Paris* 1909, **62**, 289 Faux cancers et tumeurs inflammatoires du ventre, *Sem gynéc* 1909, **14**, 369, *Bull méd Paris*, 1909, **23**, 1037 , De l'exclusion intestinale, *Rev Gynéc* 1899, **3**, 81

H Braun Ueber entzündliche Geschwülste am Darm, *Dtsch Z Chir* 1909, **100**, 1

Graser Darmstenose bedingt durch Perforation multipler falscher Divertikel, *Verh dtsch Ges Chir* 1898, **27**, 98

I am, Sir, yours faithfully,
HYMAN I GOLDSTEIN

Camden New Jersey, U S A , July 31st

OBITUARY

CHARLES CARTER BRAINE, F R C S Eng

THE death on Sept 1st of Mr Carter Braine in his seventy ninth year severs a long family association with Charing Cross Hospital For thirty years he was surgeon anæsthetist to the hospital, and his father, Francis Woodhouse Braine, F R C S , had been chloroformist there in the days when J T Clover was making anæsthetics a specialty at University College Hospital The elder Braine was a pioneer in dental gas which he made at home and carried round with him in a balloon strapped on his back, helped by his son He was a St George's man, but Carter Braine naturally studied at Charing Cross from which he qualified in 1887 to become house surgeon and assistant demonstrator of anatomy and physiology After taking the fellowship in 1890 he was appointed anæsthetist to the hospital and held the appointment until 1919 when he retired under the age limit , but he continued in private practice, limiting his attendance to dental operations in his later years He was a capable administrator, doing his work without fuss or fads He lectured on anæsthetics at the hospital and was the author with A S Underwood of a popular manual on anæsthetics in dental surgery He was also anæsthetist to King George, the Royal Dental, and St Peter's hospitals He did a good deal to make anæsthetic apparatus both more handy and more safe, and forty years ago he described a simple contrivance for administering air in combination with nitrous oxide He improved the Ormsby and Junker inhalers, devising a form of the latter which, had it then come into general use, would have prevented a number of fatal accidents

Carter Braine was a prominent mason He was a founder of the Chère Reine Lodge and the William Harvey Chapter and secretary of the lodge for some years He was past grand deacon of the United Grand Lodge of England and past assistant grand sojourner His friends always spoke of him with affection—he was never known to fail anyone in need—and in the Wimpole street neighbourhood the figure of a man carrying a large black bag and accompanied by a small white dog was for many a welcome sight Mr Carter Braine leaves a widow and two sons, one of whom is assistant surgeon to the X ray department at Guy's

PUBLIC HEALTH

Bristol Health Centres

With a view to coördinating their medical services the health education and public assistance committees of Bristol are constructing a system of health centres consisting of a central headquarters surrounded by a ring of smaller centres to serve the outer districts At each there will be accommodation for the infant welfare antenatal, and dental clinics and for school medical inspection and minor ailment treatment for all cases within its area the specialist services being mainly carried on at the central clinic Two of the peripheral centres are already working and the central building was officially opened by Sir Farquhar Buzzard on July 9th

This central building forms three sides of a square with its main entrance on Passage street and as its site is an island it has been possible to have separate entrances to the different clinics from the four surrounding streets On the ground floor is the main waiting hall for women and infants with direct access to consulting and weighing-rooms a kitchen and a perambulator shelter This floor also has dental surgeries a light room a dispensary plaster and X ray rooms, and consulting and waiting rooms for tuberculous patients The main corridor runs the length of the building and has a staircase at either end and there is a passenger lift large enough to take stretcher cases The first floor contains an office for record clerks with a Lamson Tube station communicating with all departments and a smaller office for the medical officer of health a library and staff dining and retiring rooms Over the main waiting hall is a waiting room for school-children and there are rooms for school medical inspections and the specialist clinics with an electrocardiograph and a fully equipped orthopædic treatment room The second and third floors are occupied respectively by rooms for health and district visitors and the caretaker s flat The water for the domestic supply and for warming the building is electrically heated in the basement during the night and stored in large vessels for use during the day and the other internal fittings and decorations have been planned to need a minimum of attention

The building is one which may well serve as a model for the construction of such centres in other areas

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 28TH 1937

Notifications—The following cases of infectious disease were notified during the week Small pox 0; scarlet fever 1105 diphtheria 910 enteric fever 57; pneumonia (primary or influenzal) 318; puerperal fever 46, puerperal pyrexia 139 cerebro-spinal fever 13 acute poliomyelitis 40; acute polio-encephalitis 4 encephalitis lethargica 5 relapsing fever 1 (North Westmorland) dysentery 23; ophthalmia neonatorum 115 No case of cholera plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 3rd was 2667 which included Scarlet fever 595 diphtheria 931 (diphtheria carriers 24) measles 131 whooping cough, 435, puerperal fever 24 mothers (plus 11 babies) encephalitis lethargica 34 poliomyelitis 7 At St. Margaret's Hospital there were *3 babies (plus 9 mothers) with ophthalmia neonatorum

Deaths—In 124 great towns, including London there was no death from small pox 5 (2) from enteric fever 4 (0) from measles 3 (2) from scarlet fever 18 (3) from whooping-cough 23 (1) from diphtheria 34 (7) from diarrhœa and enteritis under two years and 14(2) from influenza The figures in parentheses are those for London itself

Edmonton Bootle and Leeds each reported a death from enteric fever Liverpool had 3 deaths from whooping-cough West Bromwich 2 Diphtheria was fatal in 17 great towns in 3 cases each at Liverpool and Sunderland. Five deaths from diarrhœa were reported from Liverpool no more than * from any other large town

The number of stillbirths notified during the week was 268 (corresponding to a rate of 30 per 1000 total births) including 44 in London

MEDICAL NEWS

University of Glasgow

Prof George Barger F R S who holds the chair of chemistry in relation to medicine in the University of Edinburgh has been appointed regius professor of chemistry in the university in succession to Prof George Henderson who has resigned

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the Faculty held on Sept 6th with Prof Archibald Young the president in the chair the following were admitted to the fellowship:

Paresh Nath Baruah M.B (Edinburgh) Alfred Finlay Brown, M B (Glasgow) Enrique Eduardo Krapf M D (London) and Edwin Stewart Lawrie M B (Edinburgh)

Middlesex Hospital

The annual dinner of the medical school will be held on Friday Oct 1st at 7 30 P.M at the Savoy Hotel when Dr Douglas McAlpine will be in the chair

St George s Hospital

The annual prize distribution will be held in the board room of the hospital at 3 P M on Saturday Oct 2nd Mr W R Halliday LL.D principal of King s College London will give the inaugural address

St. Thomas s Hospital London

On Thursday Oct 14th at 2.45 P M Queen Mary will open Riddell House the new nurses home which has been given to the hospital by Lady Riddell as a memorial to her husband

Epsom College

Later on in the year the council of the college will award two France pensions of £30 per annum each to duly qualified medical men in reduced circumstances. Candidates must be not less than 55 years of age and if single must not be in receipt of an income independently of any allowance from the College or the Royal Medical Benevolent Fund of more than £100 per annum If married the combined incomes of the candidate and his wife must not exceed £150 per annum Forms of application may be obtained from the secretary 49 Bedford-square London W C 1

Plastic Surgery Congress

The second European congress of structive (plastic) surgery will be held at the house of the Royal Society of Medicine 1 Wimpole-street London W on Oct 6th and 7th Sir Harold Gillies is president of the committee of honour and Mr T Pomfret Kilner of the executive committee The subjects for discussion are free skin grafts the restoration of nasal contour and mammaplasty The office of the congress is at 149 Harley-street London W 1

London s Domiciliary Midwifery Service

The proposals which the London County Council put forward towards the end of June for the provision of a domiciliary midwifery service including maternity nursing *for doctors cases* have now been approved by the Minister of Health and will be brought into operation on or before Jan 1st 1938 The proposals provide for (1) *agreements* to be made by the L C C with some 40 voluntary organisations who already provide domiciliary midwifery and maternity nursing for the services of about 120 whole-time midwives and (2) for the appointment directly by the Council as a start of 42 whole-time salaried midwives

St Bartholomew's Hospital

The annual dinner for old students will be held at this hospital on Friday, Oct 1st, at 8 P M, when Dr C M Hinds Howell will be in the chair The hon secretaries for the dinner are Mr Reginald Vick and Dr Geoffrey Evans

King's College Hospital

An intensive course of lectures and demonstrations open to all medical practitioners will be held at this hospital on Saturday, Oct 23rd, and Sunday, Oct 24th The annual dinner of past and present students will take place on Saturday, Oct 23rd, at the May Fair Hotel at 8 P M, when Dr J A Drake, the dean will take the chair

International Spa Congress

The Budapest Spa Association is holding an international congress in Budapest from Oct 7th to 14th Medical post graduate congress will be held simultaneously with the congress, and the Royal Medical Society of Budapest will also celebrate its centenary The office of the congress is at Dorottya utca 11, Budapest V

Ramsey Cottage Hospital

The governor of the Isle of Man has opened an extension to this hospital, including a new operating theatre and more accommodation for doctors and matron

Medical Station in a Factory

The new medical station opened by I C I Metals Limited, Birmingham, on August 30th is a further stage in the development of the medical service of Imperial Chemical Industries in that area The new station now becomes the fourth on a site which covers some 280 acres and where approximately 7000 employees are engaged in the non ferrous metal industry It embodies much that is new for the first treatment of works injuries and is fitted with two side wards, each with two beds, where patients who have suffered serious injuries can be kept until such time as they have recovered from secondary shock and are fit to be sent to hospital

Broadcasts of Medical Interest

In the National programme a series of practical talks on child welfare will be given by doctors between October and Christmas, dealing with children between the ages of two and five On Oct 10th a practising medical psychologist will give the first of five talks on personality and progress under the title of Family Life Subsequent talks in October will be on youth, marriage, and old age and the years between The Northern broadcasting station has arranged a series of fortnightly talks in which a psychologist will relate, in short story form, the histories of six children who have shown in one way or another that they are difficult to handle The first story will be broadcast at 9 45 P M on Oct 6th

Child Welfare and the Fall in the Birth-rate

Speaking last Tuesday at the opening of a new maternity and child welfare centre at Glyn Neath, Sir Kingsley Wood, the Minister of Health, said a child population, healthy and sound, was more than ever important to day, not only for the sake of the children but because the fall in the birth rate had reduced the proportion of young lives in our population while the fall in the general death rate had increased the proportion of the older people Infant mortality in England and Wales remained at a low level and during the last ten years the rate of mortality has been less than half what it was at the beginning of the century This had been largely due to the efforts of the State and the local authorities and voluntary agencies by the improvement in the environment of the child Social, domestic, and sanitary and better housing conditions had played a great part The arrangements for supervising the health of children under the age of eighteen months or two years was in the main satisfactory, but he desired to see a more systematic and periodical health visiting of all children under five who do not attend school The further establishment in certain areas of special ' toddlers' clinics " and of day nurseries was also well worth while For children who were unhappily destitute local authorities had in the main spared no trouble in providing suitable homes, but perhaps the most important thing to day was to find the right people to look after the children Buildings were important but far less so than the staff Public assistance authorities could do much in this way in giving boys and girls a real start in life Children should not be retained in institutions but in homes under the guidance of people who studied their needs and made them useful citizens

In Wales, said Sir Kingsley Wood, there had been a continued and considerable expansion of services In 1926 there were 13 antenatal clinics at which about 10 per cent of expectant mothers attended, to-day there were 104 such clinics and about 40 per cent of the mothers attended them In 1926 there were 250 infant welfare centres and there were over 300 to day, and nearly 70 per cent of the children under five attended them

Chartered Society of Massage and Medical Gymnastics

The annual congress of this society will be held from Sept 20th to 24th at the London School of Economics, Houghton street, W C The founders' lecture will be given this year by Mr H A T Fairbank, who will speak on some unusual causes of backache Other medical speakers at the congress will include Prof G R Girdlestone (the treatment of scoliosis in an orthopædic hospital), Miss M Forrester Brown (the place of physiotherapy in the treatment of injuries), Mr K O Parsons (treatment by manipulation), Mr Lawrence Abel (the surgery of the sympathetic nervous system), Mr J G Yates Bell and Dr F S Cooksey (faradism and pelvic floor exercises for urinary incontinence), Dr A T Todd (a system of treatment for chronic rheumatism), Mr D McCrae Aitken (the respiratory reflex in association with exercises for spastics), Dr Noel Harris (hysteria), Dr Doris Odlum (psychological factors in physical disease), Mr H J Seddon (the application of occupational therapy to orthopædic conditions), Dr W S C Copeman (chronic rheumatism), Mr A E Porritt (ruptures—ancient and modern), Prof E W Hey Groves (intracapsular fractures and their treatment) Mr A W Adams (orthopædic and other operations under spinal anæsthesia), Dr J Kalmanson (indications for short wave therapy), Dr Clement Nicory (the importance of the physical therapeutist in preventive medicine), and Dr R L Kerr (remedial exercises in the treatment of abnormalities of binocular vision and asthenopia) The society may be addressed at Tavistock House (North), Tavistock-square, London, W C 1

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

PADDINGTON MEDICAL SOCIETY

TUESDAY Sept. 14th —9 P M (St Mary's Hospital medical school) Dr R D Lawrence General Practitioners and Diabetic Emergencies

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

UNIVERSITY OF GLASGOW

TUESDAY, Sept. 14th —4 30 P M (Tennent Memorial Building Church street) Prof A J Ballantyne Hypertension, Vascular Sclerosis and Renal Disease

BRITISH POSTGRADUATE MEDICAL SCHOOL Ducane road W

WEDNESDAY, Sept 15th —Noon clinical and pathological conference (medical) —3 P M clinical and pathological conference (surgical)

THURSDAY —3 P M operative obstetrics

Daily 10 A M to 4 P M medical clinics surgical clinics and operations obstetrical and gynæcological clinics and operations

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole street W

MONDAY Sept 13th to SATURDAY, Sept 18th —ROYAL CHEST HOSPITAL City road E C, Mon Wed and Fri 8 P M advanced course in chest and heart diseases —NATIONAL TEMPERANCE HOSPITAL Hampstead road, N W Tues and Thurs 8 P M clinical and pathological M R C P course —Plastic Surgery Wed and Thurs all-day course at various hospitals —MIDDLESEX HOSPITAL W, Mon Wed and Fri 5 30 P M primary F R C S physiology course —Courses are open only to members of the fellowship

Appointments

Conway Alan M.B Leeds, F R C.S. Edin Resident Surgical Officer at the Royal Infirmary Preston

Cope, R W M.R.C.S. Eng D.A Anæsthetist to the Miller General Hospital Greenwich

Galpine J F M D. Leeds D P H, Resident Medical Officer of the City Isolation Hospital, Coventry

Houston John M B Glasg D P H Deputy Medical Superintendent at Abergele Sanatorium

Ormston R M. A., L.R C P Edin Assistant School Medical Officer for the County of Durham

Read, R A M B Edin D P H Assistant Medical Officer of Health and Assistant School Medical Officer for Cambridge.

Ross, A I M B Edin Second Resident Assistant Medical Officer at Baguley Sanatorium

Preston County Council—The following appointments are announced:—

Porter, J H M.B Camb, D P H Chief Assistant County Medical Officer of Health

Pickup J W M D Liverp D P H Assistant County Medical Officer of Health, and

Wade, C. H M D Manch. D.P H Assistant County Medical Officer of Health

Royal Maternity Hospital Belfast—The following appointments are announced:—

Boyd A M. M B Belf. Resident Medical Officer

Roulston Enid B, M B Belf Resident Medical Officer in Charge of the Ren Block (Isolation) and

Brooke, A K. M B Edin Resident Medical Officer

Certifying Surgeon under the Factory and Workshop Acts: Dr L A. **Lewis** (Calvert District Buckingham)

Medical Referee under the Workmen's Compensation Act 1925 H. J. **Denton** M B F R C.S for the Dewsbury Leeds, Otley and Wakefield County Court Districts (Circuit No 14)

Medical Referee under the Workmen's Compensation Act 1925: **Alexander Garrow** M D of Glasgow for the Sheriffdom of Lanark with a view to his being employed in ophthalmic cases

Vacancies

For further information refer to the advertisement columns

Acton Hosp W—Cas O, at rate of £150

Aylesbury Royal Buckinghamshire Hosp—Sen and Jun Res. M.O's, £200 and £150 respectively

Barnsley Beckett Hosp and Dispensary—Res Surg. O £300

Birmingham Children's Hosp—Res and Asst. Res M O's £175 and £125 respectively

Birmingham Erdington House.—Asst. Res M O £300

Birmingham Little Bromwich Hosp for Infectious Diseases—Two Jun Res M O's each £300

Birmingham Maternity Hosp—H.S. at rate of £75

Bradford Children's Hosp—H P £150

Brighton Municipal Hosp—Third Res Asst M O £300

Brighton New Sussex Hosp for Women, Windlesham road.—Hon Med. Reg Also Clin. Asst. to Eye Dept

Bristol Southmead Municipal General Hosp.—Jun. Asst. Res. M O, at rate of £200

Burnley, Victoria Hosp—H.S at rate of £150

Cambridge Addenbrooke's Hosp—Res Anæsthetist and Emergency Officer Also H P each at rate of £130

Canterbury New Kent and Canterbury Hosp—H.S to Special Depts. at rate of £125

Cardiff King Edward VII Welsh National Memorial Association Asst. Res M.O's to North Wales Sanatorium and Glan Ely Hosp each £300

Cardiff Royal Infirmary—Hon Asst Ophth. Surgeon

Chester Royal Infirmary—H.S., £150

Dewsbury and District General Infirmary—Sen H.S £300

Doncaster Royal Infirmary—H.P, £175

Dreadnought Hosp Greenwich S.E—Receiving Room Officer at rate of £200

Dudley, Guest Hosp—Two H S's each at rate of £100–£130

Dumfries, Crichton Royal—H P, £200

Ealing Borough.—Deputy M O H £750

Ealing King Edward Memorial Hosp—Reg M O and Cas H.S. at rate of £275 and £150 respectively

Edinburgh Royal Infirmary—Clin Asst for Ear Nose and Throat Dept. £100

Elizabeth Garrett Anderson Hosp, Euston road N W—Clin Assts in Med. and Surg Depts., Hon Physician to Children's Dept. Med Reg £100 Also Third H.S. at rate of £ 0

General Post Office.—Two Asst. M O's for Headquarters Medical Branch each £500

Glasgow Corporation Mental Hosp Service.—Jun Asst. Phys for Hawkhead Mental Hosp, £325

Great Yarmouth General Hosp—H.S at rate of £110

Guildford Royal Surrey County Hosp—H.S and H.P each at rate of £150

Hosp for Sick Children Great Ormond street W.C—Res Surg. O £200 Also Res. H P and Res H.S, each at rate of £100

Hospital of St. John and St. Elizabeth 60 *Grove End road N W*—Res. H.S. at rate of £75

Hounslow Hosp—Res. M O £250

Hove General Hosp—Sen and Jun Res. M O's £150 and £120 respectively

Hull Corporation Health Dept—Asst. M O.H for Port Sanitary Work, £600

Ilford King George Hosp—Res Anæsthetist and H P at rate of £150

Infants Hosp Vincent square Westminster S W—Pathologist, £700 Also H P at rate of £100

Ipswich East Suffolk and Ipswich Hosp—H.S, £144

Leamington Spa Warneford General Hosp—H P and H S each at rate of £150 Also Cas O and Jun H.S at rate of £150

Liphook, Hants King George's Sanatorium for Sailors.—Asst M O at rate of £300.

London and Counties Medical Protection Society Ltd. Victory House Leicester-square W C—Secretary £1250

London County Council—Infectious Hosps.: Asst M.O's Grades 1 and 2 £350 and £250 respectively

London County Council.—Two Part time Obstetricians and Gynæcologists £800 and £600 Asst Pathologist £650

London Hosp Medical College E—Demonstrator in Anatomy £100

London Lock Hosp *83 *Harrow-road W*—Res M O to Female Depts. at rate of £175

London University—Crombie-Ross Lectureship in Psycho Pathology £650

Maidstone, Kent County Ophthalmic and Aural Hosp—Sen. and Jun. Ophth H.S.'s at rate of £250 and £200 respectively

Manchester Christie Hosp. and Holt Radium Institute Withington—Res. M O at rate of £150

Manchester Hosp for Consumption and Diseases of the Throat and Chest—Asst M.O for Crossley Sanatorium £200

Manchester Monsall Hosp for Infectious Diseases—Two Res. Asst. M O's each at rate of £250

Manchester St Mary's Hosp—H.S's to Special Depts. each at rate of £50

Mansfield Harlow Wood Orthopædic Hosp—H.S at rate of £200

Merthyr Tydfil County Borough.—Asst. M O H and Asst. School M O £500

Middlesbrough Holgate Municipal Hosp—Asst. Res M O £270

National Hosp for Diseases of the Heart Westmoreland-street, W—Res. M.O and Out patient M O at rate of £150 and £1 5 respectively

National Temperance Hosp, Hampstead road, N W—Cas O at rate of £120 Also Hon. Dermatologist

Newcastle General Hosp—Surg. Reg £250

New Zealand, Palmerston North Hosp—Res. M O and Reg £450

Nottingham General Hosp—H P, at rate of £150.

Pembroke County War Memorial Hosp Haverfordwest—Res. H.S, £200

Plaistow Fever Hosp E—Jun. Asst M.O, £300

Preston and County of Lancaster Royal Infirmary—H.S to Eye Ear Nose and Throat Dept. £150

Preston Wrightington Hosp Appley Bridge.—Jun. Asst M.O £200.

Princess Beatrice Hosp. Earl's Court S W—Hon Asst Obstet Phys. and Gynæcologist. Res Surg O, at rate of £200 H P and Cas. O and Cas O and Obstet. H.S. each at rate of £110

Princess Louise Kensington Hosp for Children St. Quintin avenue, W—H.P at rate of £120–£150

Royal London Ophthalmic Hosp, City road, E C—Refraction Asst L.C.C. School Dept £100 Sen Res Officer at rate of £150 Also Out Patient Officer £100

Royal National Orthopædic Hosp—Two H.S's each at rate of £250

Royal Waterloo Hosp for Children and Women Waterloo-road S E—Res. Cas and Orthopædic H.S, at rate of £150

St Bartholomew's Hosp. E C—Ophth. Surgeon

St. John's Hosp., Lewisham, S.E—Clin Asst. to M O in charge of the Electrical Massage Dept. Also Med. Reg. to Out Patient Dept. each 50 guineas.

St Leonards-on Sea Buchanan Hosp—H.S £125

Salisbury General Infirmary—H.S. at rate of £125

Salvation Army Mothers' Hosp Clapton E—Jun Res M O at rate of £80

Scarborough Hosp—Two H S's each at rate of £150

Smethwick County Borough—Sen. Asst. M O.H and Asst School M.O £650

Southampton Royal South Hants and Southampton Hosp—Res Anæsthetist and H.S. to Ear Nose and Throat Dept. at rate of £150

Southend-on-Sea General Hosp—H.P at rate of £100

South Mimms Clare Hall County (Tuberculosis) Sanatorium.—Res Asst. M O, £100

Stoke-on Trent North Staffordshire Royal Infirmary—Two H.S's each at rate of £150

Swansea General and Eye Hosp—Locum H.S to Ear Nose and Throat and Ophth. Depts. 5 guineas a week.

Wakefield Clayton Hosp—H S. at rate of £[illegible]00

Warrington Infirmary and Dispensary—Third Resident, at rate of £150

West London Hosp Hammersmith W—Res Anæsthetist at rate of £100

Westminster Hosp Broad Sanctuary S W—Wander Scholarship £[illegible]50

Wigan Royal Albert Edward Infirmary—Res Med. and Surg O and Reg £250

Willesden General Hosp Harlesden road N W—Cas O at rate of £100

Willesden Municipal (Fever) Hosp Brentfield-road N W—Res. M O £250

Woolwich and District War Memorial Hosp., Shooters Hill S.E—Res. Surg. O £175

Worcestershire County Council—Asst. Tuber O £600

Wrexham and East Denbighshire War Memorial Hosp—Res H.S for Spec Depts at rate of £150

Medical Referee under the Workmen's Compensation Act, 1925, for the Appleby Brampton Carlisle, Haltwhistle and Alston Penrith; and Wigton County Court District (Circuit No 3) Applications should be addressed the Private Secretary Home Office Whitehall London S W 1 before Sept. 25th.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Sidcup (Kent) and Newquay (Cornwall)

Advisory Committee of the prices of drugs in illicit traffic in Canada, in Egypt, and in India revealed such considerable variations in prices that no definite conclusion was drawn Prices for morphine, heroin, and opium for smoking in Toronto, Winnipeg, Edmonton, and Vancouver varied widely in different districts and even in different seasons Nor is it always possible to determine the source from which illicit narcotics are derived Thus in several cases of seizures of illicit cocaine imported into India the country of origin was not traced, though Japan was suspected A well-known brand of cocaine known as Fujitsuru has for ten years been found in illicit traffic in India, but the whereabouts of its manufacture and export have not been discovered It is, to say the least, doubtful whether all the sixty sovereign States who are parties to Hague Convention of 1912 are complying with the undertaking therein contained to "enact pharmacy laws or regulations to limit exclusively to medical and legitimate purposes the manufacture, sale, and use of morphine, cocaine, and their respective salts"

HÆMACYTOMETER COUNTING CHAMBERS AND HÆMACYTOMETER DILUTION PIPETTES

THE British Standards Institution has just issued a specification for hæmacytometer counting chambers and hæmacytometer dilution pipettes The accuracy of a blood count depends on the skill of the operator in obtaining a representative sample, in carrying out the dilution, and in the use of the counting chamber It is also limited by the errors of the apparatus employed In the preparation of this specification particular attention has been paid to the latter sources of error The accuracy of the final count depends, for example, on the accuracy of a number of elements of the counting chamber—e g , accuracy of ruling, accuracy of depth, and departure of under surface of cover glass from a plane In view of the number of possible sources of error the tolerances on individual elements had of necessity to be kept small in order to avoid the possibility of a comparatively large error in the final count due to an accumulation of small errors The committee however, did not approach the question of tolerances in a purely theoretical manner On the basis of measurements carried out at the National Physical Laboratory on samples submitted by manufacturers as representative of current production, the tolerances were also related to the degree of accuracy attainable in manufacture without unduly increasing the cost of production Copies of this specification (No 748–1937) may be obtained from the British Standards Institution, 28, Victoria-street, London, S W 1, price 2*s* 2*d* post free

AN INTRODUCTION TO BIOLOGY

IT is rare for any author to succeed in the dual purpose of providing an introduction to the study of the human body suitable for the biological student and also for the general public Mr Davenport has done so only in those parts of his book[1] which deal with developmental anatomy Elsewhere the biologist will be constantly annoyed by the misleading simplification of complex issues That nerves convey an electric current and that genes are catalysts are two among many statements which should either have been omitted or amplified with some discussion of the known facts The layman will undoubtedly find much to interest him, though he will need to have had a thorough grounding in the elements of the subject if he is to understand certain sections For example, the chapter on the nature of the genes will probably not be intelligible to the uninitiated, and the omission of the modern conception of the interaction between genes in a "gene complex" is regrettable The general reader, again, will not find it easy to distinguish between speculation and established fact Useful bibliographies are given at the end of each chapter, and reference to some of the works quoted will clear up difficulties which this one leaves unsolved

THE EVOLUTION OF SOCIAL HUMAN LIFE

As a simple exposition of the principles of biology in relation to other branches of human knowledge the "Science of Life" is a masterpiece It has now been revised and republished in a series of eight parts of which the last[1] has reached us This volume deals with the evolution of the human social life, the relationship between civilised man and his environment, health and disease, and closes with a section on the present state of human society with some speculation concerning the future A popular account of the implications of a science as young as biology must inevitably include speculation annoying to the specialist and be imbued with a particular point of view There is little danger here, however, that the reader will be misled into confusing opinion with established fact, and those who have read other works of the senior author will have little difficulty in recognising his familiar but always stimulating hand in some of the concluding sections

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Births, Marriages, and Deaths

BIRTHS

NOLAN —On August 30th, at Welbeck street W 1, the wife of Dr Leo Nolan Hendon of twin sons

PAKENHAM WALSH.—On Sept. 2nd at Lancaster the wife of Dr R Pakenham Walsh of a daughter

PICKLES —On Sept 2nd at Carlton road S W 15, the wife of Dr W J Reed Pickles, of a son

MARRIAGES

BIRCH—JOHNSON —On August 26th at the Parish Church Campden Glos Charles Birch M R C.S to Enid Gertrude Vera Johnson of Liverpool

GROGONO—PRESTON —On Sept 4th at St Helen's Church Abingdon Keith Grogono M B B S, Lond to Molly *Preston only daughter of Dr and Mrs Preston of* Abingdon

HALL—WILSON —On Sept 3rd at Harrow Alexander Stephenson Hall M.R C P to Edith Mary Partington Wilson M B

PATERSON—CROSS —On Sept 1st at St Philip s Church Alderley Ronald Simpson Paterson M D to Nancy Katherine only daughter of the late W Haslam Cross, J P of Cheadle and Mrs Cross

RYAN—ESPERSON —On Sept 4th at Notre Dame of Victory Kensington Dr Thomas Joseph Ryan eldest son of Mr and Mrs James Ryan of Dulwich to Iréne only daughter of Mr W V Esperson of Kensington

STEPHENS—MACGREGOR —On August 28th at the Priory Church of St Bartholomew the Great E C , Keith Fielding Stephens M B to Margaret Ann only child of Mrs M MacGregor

THOMPSON—SHAW —On Sept 6th at the Church of the English Martyrs Streatham Harold Humphrey Thompson M R C S Eng to Joan Kathleen Mary only daughter of the late Dr F J F Shaw C I E Pusa Bihar and Delhi India and Mrs Shaw Streatham

WILLIAMS—JEWSON —On Sept 2nd 1937 at Eaton Parish Church, Norfolk Denis John Williams M D , B Sc Manch M R C P Lond , to Joyce Beverley Jewson M B B.S D P H Lond., D C H of Norwich

DEATHS

BRAINE.—On Sept 1st at Grove End gardens, N W 8 Charles Carter Braine F R C S Eng aged 78

BURGESS —On Sept. 2nd at Eastbourne Edward Arthur Burgess M R C S Eng L S A Senior Surgeon to the Peruvian Navy in his 87th year

GILLEN —On Sept 6th in London John Besley Gillen, M B Adelaide aged 42

HUBBARD —On Sept 5th at St Leonards on Sea Walter Lovett Hubbard M D Brux M R C S Eng aged 79

KIDD —On Sept 1st. at Eltham S E 9 Archibald Kidd M R C S Eng D P H R C P S Eng late of Gravesend

MACKINNON —On Sept 5th at Hove, Major Archibald Donald Mackinnon C M G O B E , M D Aberd of Dunringell Isle of Skye

SINCLAIR —On Sept 2nd, Harold Weightman Sinclair M D Lond D P H of Norbury aged 60 years

WATT —At 15 Molesey avenue Auckland Park Johannesburg South Africa on 3rd September 1937 Andrew Hutton Watt M B C M F R C S Edin

N.B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

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[1] How We Came by Our Bodies By C. B Davenport London Macmillan and Co 1937 Pp 401 10*s* 6*d*

[1] The Biology of the Human Race By H G Wells Julian Huxley and G P Wells London Cassell and Co 1937 Pp 205 4*s*

ADDRESSES AND ORIGINAL ARTICLES

THE PSYCHOLOGICAL FACTOR IN CARDIAC PAIN

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(From the Cardiographic Department St Bartholomew's Hospital and the Tavistock Clinic)

IN continuance of previous investigations on similar lines I welcomed the opportunity offered to me by Dr Geoffrey Bourne to study the psychopathology of cardiac pain in the cardiographic department of St Bartholomew's Hospital

Normally we are not conscious of the action of the heart but on excitement or exertion it may become noticeable in form of palpitation Slight sensations in the heart region due to sudden emotional shock are a common experience in everyday life and neurotic patients may have definite pain that cannot be accounted for by any anatomical cardiac lesion The view is generally accepted that certain constitutional types of personality certain races and professions are more prone to develop angina pectoris than others it has also been known since the days of Heberden that emotions are as likely as physical effort to provoke individual attacks of angina pectoris.

Thus it appeared justifiable first to study the personality structure of patients suffering from cardiac pain before the onset of their complaint secondly to ascertain the emotional factor in the formation of cardiac pain and finally to put forth a theory about the psychodynamics of this pain

Personality of Patients suffering from Cardiac Pain

A survey of the relevant literature and an account of the material and the procedure of approach was given in a preceding paper* together with Dr Bourne and Dr Bodley Scott the personality of the patients at issue was then dealt with In that paper 57 cases of cardiac pain were investigated

The present article deals with 73 patients suffering from cardiac pain (including cases of coronary thrombosis, valvular disease cardiovascular syphilis hyperpiesis &c.) who were submitted to psychological examination. The additional 16 cases were patients with cardiac pain in whom the type of pain had not been personally classified by Dr Bourne or Dr Scott. They were not available therefore for the first paper but are used in the present communication

The psychological diagnoses of the patients were correlated in the first paper to the clinical diagnoses and the type of pain according to Bourne's classification It was found that the vast majority of patients suffering from cardiac pain, irrespective of the underlying organic cardiac disorder consisted of psychoneurotics Of 73 patients examined 48 were neurotics—the rest were melancholics, epileptics, cerebral arterio-sclerotics and well balanced persons. Those suffering from cardiac pain were contrasted with a control group of cardiac patients without pain. The majority of those without cardiac pain consisted of well balanced persons and cerebral arterio-sclerotics of 35 patients only 7 were neurotics The predominance of psychoneurotics among patients suffering from cardiac pain in comparison with patients without cardiac pain is obvious In accordance with common practice the psychoneurotic patients were classified into anxiety states † conversion hysteria obsessional neuroses and reactive depressions Of the 48 psychoneurotics with cardiac pain 32 suffered from anxiety states and 8 from conversion hysteria 3 were obsessional neurotics and 3 reactive depressives while of 7 psychoneurotics without cardiac pain 4 suffered from anxiety states ; 2 were hysterics, and one was a reactive depressive

The frequency of psychoneuroses among patients suffering from cardiac pain suggests a possible connexion of the mental condition with the formation of pain With this fact in view a further psychological examination of the group of 48 psychoneurotics suffering from cardiac pain was undertaken.

The Emotional Factor

Uniformly all the patients examined related that excitement brought on attacks of cardiac pain The excitement was either due to personal involvement of the patient—e g arguments unpleasant and startling news laughing, bad dreams sexual intercourse—or due to anticipation of happy or unhappy events hurry to catch a train or bus or due to identification of the patient with one of the participants of an exciting situation—e g an exciting novel, a tragic film or watching a quarrel, or a football match One patient impressed by the sight of another patient in the same ward developed attacks of angina innocens precisely on the day after the other had had attacks of cardiac pain

EMOTION PRECEDING THE ONSET OF CARDIAC PAIN

In 36 out of the total number of 48 psychoneurotic patients examined emotional stress or strain, or a definite emotional trauma serious enough to be regarded as a precipitating agent immediately preceded the onset of cardiac pain. In the remaining cases an initiating emotional upset was lacking This might be either because there was no such disturbance or because the emotional conflict was so deeply rooted in the neurotic personality that a single interview was insufficient to elicit information about it

TYPE OF EMOTION

Examination of the nature of the initiating emotion shows that in 27 out of 38 cases it consisted of social, domestic or sexual difficulties

Economic—In 9 cases serious financial reverses failure in business, economic insecurity, loss of job impending dismissal, or unsuitable occupation preceded the onset of pain.

A master mariner aged 68 very conscientious in his work, had to work under a new superior who for some reason or other disliked him intensely The superior kept on finding fault almost every day and exposed the patient to the criticism of the managers of the firm After a long connexion with the firm over many years the

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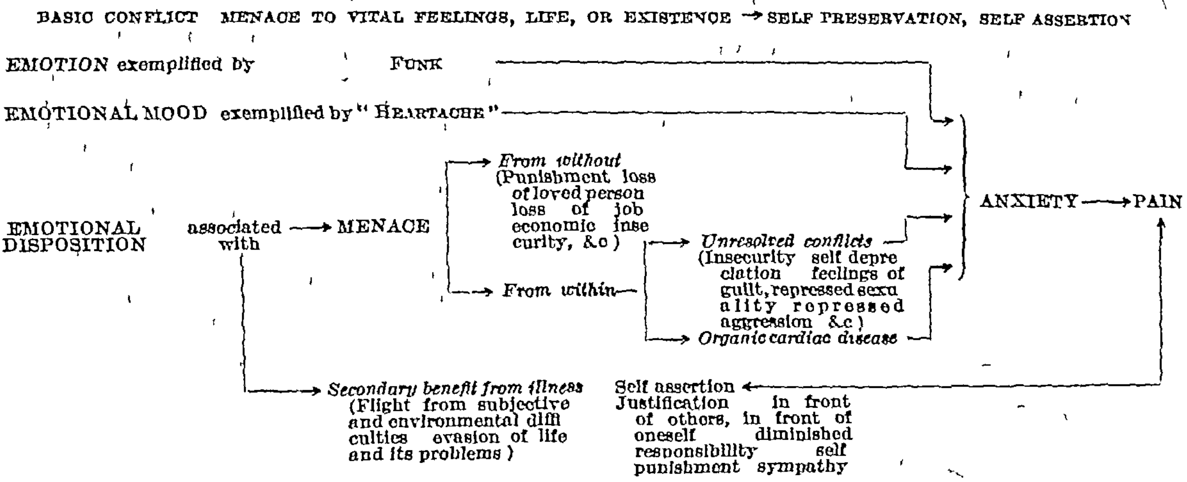
* Published in THE LANCET last week

† *Anxiety states* are conditions of morbid anxiety usually accompanied by physical symptoms. The anxiety states embrace anxiety neurosis in which the anxiety is experienced by the patient primarily in the mental sphere and anxiety hysteria in which somatic manifestations are prominent *Conversion hysteria* is a mental disorder which finds expression in the form of bodily symptoms The bodily symptoms are produced by the conversion of morbid anxiety by the effect of suggestion or as the result of some idea in the sufferer's mind which is usually purposive though dissociated from conscious purpose *Obsessional neuroses* are conditions in which ideas or emotions constantly recur in the mind of the patient without adequate reason or in which there is a sense of compulsion to some activity usually purposeless, and always symbolic (Gordon Harris, and Rees, 1936). *Reactive depressions* are conditions where the exciting cause is obvious.

PSYCHOGENESIS OF CARDIAC PAIN


BASIC CONFLICT MENACE TO VITAL FEELINGS, LIFE, OR EXISTENCE → SELF PRESERVATION, SELF ASSERTION
EMOTION exemplified by FUNK
EMOTIONAL MOOD exemplified by "HEARTACHE"
EMOTIONAL DISPOSITION associated with → MENACE
From without (Punishment loss of loved person loss of job economic insecurity, &c)
From within
Unresolved conflicts (Insecurity self depreciation feelings of guilt, repressed sexuality repressed aggression &c)
Organic cardiac disease
ANXIETY → PAIN
Secondary benefit from illness (Flight from subjective and environmental difficulties evasion of life and its problems)
Self assertion Justification in front of others, in front of oneself diminished responsibility self punishment sympathy

and had to go to bed for several weeks. Whitsun, 1936, she left her husband; she tried living with him again, but it failed and she left him finally in July, 1936. In August of that year her present complaints started. While bending down she had a dull pain in the heart region which gradually worked across the chest. Since October she has suffered from shortness of breath on walking. Physical diagnosis: mitral stenosis, angina innocens.

The history of this patient reveals from early childhood onwards a discontent with her own feminine rôle, leading to repressed sexuality and ultimately resulting in frigidity. Her strong drive, her ambition, her desire to be above the working class from which she originated, seems to be due to an over compensated feeling of inferiority. She works off her psychic energy in her increased occupational activity, and finally breaks down when, after marriage, a twofold clash between wishes and attainments, and inhibitions and demands of married life takes place.

From psycho analytical quarters the objection may be raised that this superficial study, insufficient as it is, falls short of giving a real insight into the emotional life of the patients concerned and that only by the penetrative procedure of psycho analytical approach can their neurotic structure be elucidated. Because, however, of the enormous amount of time required for each case, and cardiac patients come rarely under the scrutiny of psycho analysis, hitherto the number of cases examined by psycho analysis is still very small. Some observations have been reported by the Menningers (1936)—who quote French and also Alexander—Wolfe (1934), and Elmore (1936). Admittedly the interview method has its shortcomings but the data, which are considered more as a suggestion than as an established fact, may act as a stimulus for psycho analytical research.

The Psychodynamics of Cardiac Pain

Summing up, it has been shown that in a group of neurotic patients with or without organic lesion of the heart a traumatic event may precipitate neurotic manifestations including cardiac pain, ranging from simple pain to angina of effort.

THE ESSENTIAL RÔLE OF ANXIETY

A glance at the diagram reveals that the factor common to all precipitating causes is a menace to vital feelings, life, or existence. The menace may originate in the outer world and consist of financial reverses, failure in business, impending dismissal, loss of job, disease, or death of a loved person, disappointment in married life, dissension in family, &c.; it may be due to a serious organic disease which interferes with occupational, social, or sexual activities of the person affected; or it may originate in the inner world and be due to the presence of repressed unfulfilled desires incompatible with the self-respect of the person concerned. But even if the menace originates in the outer world it is generally agreed that the emotional tension, the anxiety, which results from the conflict between menace to vital feelings, life and existence on one side, and on the other self-preservation and self-assertion, ultimately goes back to repressed incidents of a strongly emotional content in early childhood. The current conflict between aims and frustrations is, in the analytical conception, only a revival of the basic neurotic conflict between infantile instinctual urges and the repressing super ego. As a response to the danger from within or without the patient develops attacks of apparently causeless anxiety, phobias, or other psychic equivalents of anxiety; or he transmutes and discharges his anxiety by somatic phenomena familiar as accompaniments of anxiety—e.g., bouts of palpitations—or he renders the anxiety innocuous by conversion into cardiac pain, dissociating the symptoms from the rest of the personality; so both the patient who displays the characteristic "belle indifference" of the hysteric (Janet) and the doctor lose sight of the psychogenic origin of the symptoms.

A case demonstrating the gradual conversion of anxiety into palpitations and pain may be reported.

A man, aged 61, was a cabinet joiner; his father, a heavy drinker and a hasty tempered man, died when the patient was 11 years old. From early childhood he was over-attached to his mother who was even tempered. He was quiet, shy, and sensitive, and at school he was always top of the class and took several prizes; he left school in the seventh standard, after which he was an apprentice to a joiner's firm. He was always over conscientious in his work and severely hurt by criticism. At 18 he realised his ambitions and became a soldier. He was daring and efficient, but left the service thoroughly disgusted by the "death and glory" atmosphere and frightened by the idea of another war. When he was 27, he married and settled down as a cabinet joiner. His married life was happy; he had 4 children.

The first symptoms of his present complaint started during the late war. During the air raids he was seized with a panic, used to run and hide, and had severe attacks of palpitation. Similar attacks of palpitation were brought on by smoking The attacks increased in intensity and frequency after the war and they were now associated with stiffness of the fingers When sitting in a smoking compartment of a train he had to keep his handkerchief in front of his mouth because the smoke caused palpitations A number of fears developed: of accidents, of crowds of crossing roads of crossing open spaces of looking down from a height of diseases of animals If there was a quarrel or an accident he had to walk to the other side of the street He kept out of crowds afraid something might happen to him He stopped travelling underground for fear it might crash— it is 64 feet below the earth Crossing roads or open spaces brought on palpitation If there was an epidemic of 'flu he felt sure that he would take it he was afraid of going near a horse and was frightened by dogs An inexplicable fear that something was going to happen overtook him The condition grew gradually worse and during the last 7 years his attacks of anxiety have been accompanied by cardiac pain Beginning about the same time he noticed an impediment of speech He is very much alarmed about his cardiac pain The heart is the engine of the body once it stops working everything must stop He cannot run he cannot walk everything points to a fatal disease As his various fears increase he is afraid he may lose his reason. Clinical diagnosis: essential hypertension, angina innocens

SECONDARY BENEFITS FROM ILLNESS

The unconscious aim of the cardiac pain—contributory in its formation and common with other manifestations of conversion hysteria—is to avoid anxiety and to gain an end otherwise unattainable by the patient By means of his flight into disease the patient evades his subjective and environmental difficulties and in addition as a secondary benefit from illness secures self-assertion and justification in front of others and himself He exchanges the distrust and bewilderment generally provoked in the onlooker by psychical symptoms for the tenderness attention and sympathy generally displayed towards a physically diseased person Two cases especially illustrating this may be given in short abstracts.

A man aged 47 an obsessional neurotic suffers from fear of being held and not able to move of being trapped of being buried before he was dead of disease: if someone says that his mother died from cancer he would fear contact with him—afraid of germs since a teacher at school told him about the spread of diseases by dust When he is invited out to a dinner party he looks carefully on the plates and every utensil on the table if he discovers dust on any of them he passes them back there are millions of germs He often got into trouble on account of this He tries to get into the lavatory without touching the handle Washing compulsion his wife says he washes himself away Counting compulsion: his favourite figure is 8 the sum of his birth date is 35 which added up again is equal to 8, so that Jan 23rd 1937 was one of his lucky days because its sum is 8 Although he does not want to and is not religious he feels compelled to recite the Lord's Prayer whenever his brain is empty He never visited the grave of his mother because if he did so he would lose someone near to him &c At 26 he married From the very beginning he had trouble with his wife because he was exceedingly jealous She was never allowed to go out by herself His wife left him on two occasions on account of his jealousy During arguments he got a sharp pain in the region of his heart he used to think she is breaking my heart His actual trouble started 3 years ago At the time his wife suffered from kleptomania she was arrested for stealing an article and sent to prison for two months The whole affair was hushed up he told people she was in hospital but all the time he was in constant fear that it would be found out It was a disgrace I cannot stand disgrace He became terribly down hearted When she came out of prison he was in constant anxiety that she might do the same thing again; moreover she did not care about the house and began to drink Worried about his home affairs he neglected his business He had to see that the firm was never short of material. At the time he failed If anyone failed in his job he was ruthlessly dismissed He had seen it happen very frequently He was afraid he might be the next His anxiety gradually worked up to an acme Cornered in a situation where there seemed to be no way out he developed dramatic attacks of cardiac pain with the result that he did not get the sack from business, and his wife gave up drinking and stealing In business his failure was put down to his disease and he was sent to a doctor His wife, frightened by the thought that she was going to lose him and that his condition might be due to her fault changed her attitude altogether She became very considerate looked after the house and did not steal or drink any more Clinical diagnosis essential hypertension and spasmodic angina

A married woman aged 38 discovered in 1932 that her 16-year-old son had got into bad company He was a good boy before; now however together with two friends he began to steal and break open machines He was put on probation but during this time he did the same thing again. He was sent to a remand home attached to the police station for two weeks Eventually in October 1933 the boy was sent to an approved school and was kept there for a year and nine months When the patient first came to the police station she was trembling all over her body and her legs seemed to give way Her heart was throbbing up to her neck she had a feeling of tightness in the upper part of her stomach She was afraid her boy might be sent to prison. She and her husband were decent all their lives and this was a disgrace She blamed herself for having neglected the boy; she ought to have brought him up better she ought to have looked after him instead of doing work from morning till night in the laundry "It nearly broke my heart" She considered suicide She worried about it for months afterwards always in anxious expectation that some trouble might be ahead When there was a knock at the door she jumped her legs gave way she was unable to open the door always thought a policeman might be there She was apprehensive that the affair might become public it might be in the local paper she might lose her job in the laundry it might harm her husband's business Gradually her anxiety worked up to such a pitch that she could not be alone, lost her appetite became sleepless and awfully thin She had no confidence in doing anything was trembling quite unable to hold a teacup and suffered from a horrible feeling of tightness across the upper part of her stomach Although she knew that it was absolutely silly she had a constant impulse to cut her fingers and did so on one occasion When walking along the street she always had the fear that someone would come up behind her and hit her on the head She had no confidence in crossing roads, she used to shake, and had a feeling like cold water running down her back She was a hard worker before now she easily got tired. Everything seemed too much for her At Christmas, 1935 apparently without any obvious reason her attacks of cardiac pain started As she thought she had overworked herself she gave up her work in the laundry in the hope that working at home might give her relief But instead of getting better the pain got worse so that eventually she ceased working altogether Since she has had rest she feels better in herself but the pain has become worse Incidentally the beginning of her pain at Christmas 1935 coincides with the return of her son Clinical diagnosis: syphilitic aortitis.

The coincidence of the beginning of the attacks of cardiac pain with the return of her son suggest that the purpose of the cardiac pain was to give the patient a plausible excuse to stop work, to stay at home and look after the son

The Mechanism of Conversion

There remains the problem why the heart is chosen as a site of hysterical manifestations and how in particular the mysterious leap from mental to bodily symptoms (Ferenczi) is effected

SYMBOLIC FUNCTION OF THE HEART

Every attempt to interpret the conversion of anxiety into cardiac pain necessarily starts from the close relationship between feelings and heart There are terms in all languages referring to the heart as an organ expressing feeling and character We talk about "hard hearted," "soft hearted," "kind hearted," or even "heartless" people The heart is the organ of sympathy We talk about "heartfelt" sympathy Courage is localised in the heart Courageous people are spoken of as "strong hearted," cowards as "chicken hearted" The heart may be "bursting" with joy, grief "gnaws" at the heart, distress may "rend" or "break" the heart So in common language the heart symbolises the gist of the personality, the feelings, the affectivity and character qualities of a person

In accordance with common usage "heartache" in patients with or without an organic lesion of their heart may be a symbol, as recently pointed out by Halliday, which signifies that the feelings of a person have been severely hurt, that a person has been exposed to prolonged emotional stress, or that an individual feels himself threatened

PARS PRO TOTO

Slightly different is the mechanism if the whole self identifies itself with the heart As already pointed out, the vital importance of the heart function is common knowledge Everybody knows that the stopping of the heart means instantaneous death So it becomes understandable that the heart more than any other organ is apt to be used as a representative of the whole personality, and also, that the anxiety resulting from a menace to vital feelings, life, or existence is likely to be focused and condensed on the heart The whole process is probably nothing more than a gross exaggeration of the slight cardiac sensations which occur in everyone in everyday life as a result of sudden emotional shock

PHYSICAL MISINTERPRETATION

In addition the apparently causeless anxiety which overtakes the patient gives rise to a feeling of uneasiness and oppression, and so, as stated by J Schultz, Kronfeld, v Wyss, Christoffel, Foster, and others, the bewildered patient, at a loss to understand what is going on in himself, refers, in a search for a plausible explanation, his abnormal condition to a localised physical disease Thus the misinterpretation of a sensation, the "somatic misunderstanding" (Schultz), and the faulty idea of reference results in the provocation of cardiac complaints

LOCUS MINORIS RESISTENTIÆ

Finally it goes without saying that an anatomical lesion of the heart—the "organ inferiority" of Adler, the "somatic compliance" of Freud—both by itself and by focusing the attention of the patient on the diseased organ predisposes and facilitates the shunting of the emotional streams along the line of least resistance This all the more if the cardiac disorder —e g, in coronary thrombosis—is accompanied by symptoms of organic origin arising in the cardiac area The pain pathway once established is liable and likely to be used more easily and again

Summary

1 A series of 73 patients suffering from cardiac pain were examined from the organic and psychological point of view Irrespective of an underlying organic cardiac disorder, 48 of these were found to be psychoneurotics, this group was submitted to further psychological exploration

2 The emotional factor in the formation of individual attacks and the onset of cardiac pain was examined. In the majority of patients examined cardiac pain seemed to be a manifestation of conversion hysteria

3 A theory about the psychodynamics of cardiac pain is put forward

4 The application of psychotherapy appears justified in selected patients suffering from cardiac pain, certain cases of angina of effort included

I wish to express my indebtedness to Dr Geoffrey Bourne for permission to investigate patients under his care and for his kind suggestions I wish to thank Dr J. R Rees, medical director of the Tavistock Clinic, for the facilities given to me at the Clinic, and finally I am extremely grateful to the Halley Stewart Trust for enabling me to carry out these investigations

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THE ACTION OF NORMAL AND DIABETIC SERA ON ANIMAL LIVER GLYCOGEN

IN VIVO AND IN VITRO

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In a recent study of the "diabetogenic" action of the sera of diabetic patients we produced evidence that the sera of certain diabetics rendered rabbits relatively insensitive to insulin (De Wesselow and Griffiths 1936) The only work along similar lines with which we are acquainted is that of Boller, Uiberrack, and Falta (1934), and of Anselmino and Hoffman (1935)

Boller and others found that as a result of transfusion of 300 c cm of blood from a normal subject after a carbo hydrate meal into an insulin-sensitive diabetic, the blood sugar of the recipient fell over a short period; blood removed from diabetics, whether sensitive or resistant to insulin, did not produce this effect Further, they found that blood from normal and insulin-sensitive patients half an hour after injection of 20 units of insulin reduced the blood-sugar of a sensitive diabetic recipient, but they were unable to detect the presence of insulin in the blood of resistant diabetics by this method They concluded that insulin sensitive patients suffer from an insufficiency of insulin, and that their failure to detect the presence of injected insulin in the blood of the resistant patient might be due to the existence in their blood of a substance in the nature of an antibody which paralyses the activity of insulin.

Anselmino and Hoffman (1935) found that the injection of diabetic serum into rats was followed by a diminution in the liver glycogen of the animals much greater than that observed after the injection of normal serum They had already claimed to have isolated from the anterior pituitary by ultrafiltration at pH 5·4 a carbohydrate hormone which lowered the liver glycogen of rats by 50–90 per cent within two hours and diminished the fatty-acid content of the liver but which did not affect the blood-sugar This hormone they believed to be distinct from their fat metabolism hormone of the anterior pituitary obtainable by ultrafiltration at an alkaline reaction which produced an increase in the ketone bodies of the blood and in the unsaturated fatty acids of the liver in rats but which had no action on the liver glycogen Examining the blood of diabetic individuals mainly long-standing they found that 3 c cm of the fasting serum produced a very definite fall in the liver glycogen of the rat and a rise in the ketone content of the blood; the sera of normal individuals on the other hand had only a very slight effect on the glycogen content of the liver and on the blood ketones The effect on the blood-sugar was not mentioned

In view of the possible bearing of Anselmino and Hoffman's findings on our own work on the effect of injected diabetic serum on the response to insulin of the rabbit, we have attempted to confirm their results. We had in mind first to study the effect of diabetic sera in general on the liver glycogen and, secondly to determine whether diabetics were as in our own experiments divisible into two groups In our experience the serum of certain elderly obese diabetics exercised an inhibitory effect upon the fall of blood-sugar following intravenous injection of insulin into the rabbit, while that of young diabetics had no such action It had seemed to us that the rapid recovery from post-insulin hypoglycæmia, which occurred in animals injected with the sera of elderly and obese diabetics might be due either to the presence of some substance which directly inhibited the action of insulin or possibly to the presence of a glycogenolytic body resembling the active principle of the anterior pituitary described by Cope and Marks (1934) which acts as a synergist to adrenaline in liberating liver glycogen. In the latter case the work of Anselmino and Hoffman (1935) had a direct bearing upon our findings

METHODS

We have used male rats 150–250 g in weight.

Each animal received a daily ration consisting of 10 g crushed wheat 3·5 g Glaxo and 5 g glucose made into a mash with water In addition they received carrots, a little greenstuff and occasionally cod liver oil Before being used for an experiment the rats were placed for at least 4 days in an incubator under thermostatic control at 70 F After injection of the serum both test animals and controls were returned to the incubator and deprived of food until the time of killing since it was possible that the discomfort of the injection might lead to the injected animals refusing food while the controls continued to eat The serum was obtained from fasting normal and diabetic individuals, and was injected within a few hours of bleeding. The animals were killed by a blow on the head three hours after the serum injection bled out from the neck the liver rapidly removed, weighed and transferred to boiling 40 per cent potassium hydroxide the glycogen was estimated by Pflüger's method, three volumes of absolute alcohol being used for precipitation. At least two controls were used in each experiment our usual practice being to use 2 controls, 2 rats injected with a normal and 2 with a diabetic serum in each test Blood sugar was estimated by MacLean's method

Our controls showed a rather lower percentage of liver glycogen than those of Anselmino and Hoffman which was to be expected in view of the three hours' fast before killing We agree with Cori (1930) that considerable variations occur in the amount of glycogen in rats' livers, even when the animals are kept under standard conditions, but we believe our groups to be of such a size as to warrant significance being attached to the results obtained.

To test the effect of the discomfort of the injection on the liver glycogen, 5 rats were injected with 3 c.cm. of normal saline subcutaneously killed 3 hours later and their liver glycogen compared with that of 5 controls The average liver glycogen of the injected animals was 3·1 per cent (3·0 3·8 3·8 3·2 and 1·8 per cent) as against 3·0 per cent (3·2 2·9 2·7 3·2 2·7 per cent) for the controls The average value of the blood-sugar at the time of killing was for the controls 0·125 per cent and for the injected animals 0·122 per cent

The injection qua se is therefore without effect on the liver glycogen and blood-sugar

EFFECT OF INJECTING DIABETIC SERA

The effects of injecting normal and diabetic sera on the liver glycogen and blood-sugar of the rats are shown in Table I It is obvious that though in all these groups the liver glycogen of the injected rats is lower than that of the corresponding controls the reduction in each group is approximately the same—38 per cent., 37 per cent and 42 per cent The property of reducing the liver glycogen is therefore in no way peculiar to the diabetic sera. Further sera obtained from the same patient on different occasions may show very different glycogen reducing powers In one young diabetic for instance, the first serum examined reduced the liver glycogen by 11 per cent only the second by as much as 74 per cent. We were unable to correlate these differences with any corresponding change in the patient's metabolic condition The one fact that emerges is that injection of human serum into rats is followed by a fall in the liver glycogen of the animals but we are quite unable to confirm the statement of Anselmino and Hoffman (1935) that this fall is more pronounced after injection of the serum of the diabetic patient.

TABLE I

Effect of Normal and Diabetic Serum on the Liver Glycogen of the Rat

(Average values for liver glycogen and blood-sugar are given)

—	Cases	Rats.	Liver glycogen	Blood sugar
			g per 100 c.cm	
Elderly diabetics	4	8	1·76	0·093
Controls uninjected		6	2·72	0·096
Young diabetics	8	21	1·99	0·098
Controls uninjected		19	3·12	0·098
Normals	9	21	1·52	0·102
Controls uninjected		19	2·53	0·090

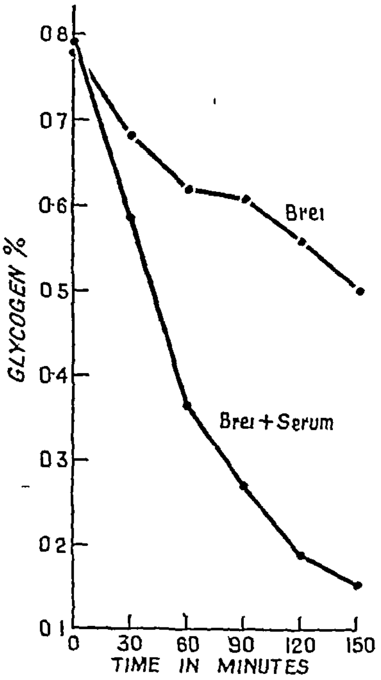
The blood-sugar of the animals estimated at the time of killing is not apparently affected by the serum In the first group the blood-sugar is lower in the injected animals but in this small group two very low values occurred and we would place more emphasis on the two larger groups comprising 80 animals, in which the blood-sugars of the injected and uninjected animals show excellent agreement. The blood-sugar figures do not suggest that any excessive glycogenolysis with discharge of sugar from the liver into the blood stream, was occurring at the time of killing We have already noted that the injection of diabetic serum into rabbits, though in some cases it affects the response to insulin, does not alter the blood sugar estimated three hours after injection

In view of the possibility that the activity of a humoral mechanism regulating the discharge of liver glycogen might vary with the patient's metabolic condition we have studied the effects of variations in the patient's blood sugar level on the capacity of his plasma to reduce the animal's liver glycogen. The plasma of normal individuals in the fasting state was found to reduce the liver glycogen by 36 per cent, while injection of the plasma of the same patients, taken 90 minutes after ingestion of 100 g of glucose, produced a fall of 29 per cent Similarly, the plasma taken during recovery from insulin hypoglycæmia, 30 minutes after injection into a vein of 5 units of insulin, was not appreciably more potent than the plasma of the same patient in the fasting state The activity of plasma in reducing liver glycogen could not, therefore, be correlated with the metabolic state of the donor

EFFECT OF SERUM ON HEPATIC GLYCOGENOLYSIS IN VITRO

In view of the effect of the injected serum on the liver glycogen of the living animal we proceeded to investigate the action of normal fasting human serum on hepatic glycogenolysis in vitro

A brei was prepared from the liver of a rabbit, killed and bled out 3 hours after a meal of carrots, by grinding with sand in a phosphate buffer solution of *p*H 7 4 and straining through muslin A mixture of 10 c cm of the brei and 10 c cm of serum was placed in a flask and incubated in a water bath at 37° C with constant shaking for 2½ hours As a control 10 c cm of the liver brei plus 10 c cm of Tyrode solution were incubated under the same conditions Sterile precautions were observed throughout Samples of 1 c cm were removed at 30 minute intervals and the glycogen estimated by the micromethod described by Evans and others (1931)



Effect of serum on hepatic glycogenolysis in vitro (rabbit's liver)

As is seen in the graph the rate of glycogenolysis was greatly enhanced in the presence of serum

An analysis of the sugar present in the brei before and after incubation was made Assuming that any increase in reducing power on hydrolysis after removal of glycogen is due to the presence of maltose the rabbit liver brei, before incubation, would appear to contain no maltose (Table II) The brei incubated with serum appears, however, to develop a considerable content of this sugar It seems reasonable therefore, to assume that the accelerating power of human serum on glycogenolysis in the rabbit liver is due to its inherent diastatic activity

We then examined the behaviour of rat liver brei, fortified with glycogen, by the same methods To our surprise, the serum produced no acceleration in glycogenolysis The brei itself before incubation, in contradistinction to the rabbit's, contained appreciable quantities of maltose, and the reducing substance present at the two hours' incubation was apparently almost entirely maltose, the reducing power after hydrolysis being approximately doubled, very little glucose was therefore present in the final product No dextrins were formed The mean results of three experiments of this type are shown in Table III

TABLE II

Rabbit Reducing Power of Brei and Brei+Serum before and after Hydrolysis

(Expressed as g glucose per cent)

—	Before and after incubation	BREI		BREI + SERUM	
		Non hydro lysed	Hydro lysed	Non hydro lysed	Hydro lysed
1	Before After	0 173 0 376	0 169 0 413	0·201 0 507	0 176 0 582
2	Before After	0 045 0 320	0 036 0 351	0 066 0 470	0 063 0 713
3	Before After	0·067 0 173	0 048 0 396	0·079 0·226	0 059 0 560

TABLE III

Rat Glycogen and Reducing Power of Brei and Brei+Serum before and after Hydrolysis

(Expressed as g glucose per cent)

Before and after incubation.	BREI			BREI + SERUM		
	Glycogen	Sugar non hydrolysed	Sugar hydrolysed	Glycogen	Sugar non hydrolysed.	Sugar hydrolysed
Before	1 03	0 13	0 21	1 10	0 13	0 18
After	0 25	0 54	1 09	0 30	0 59	1·07

The glycogenolytic action of the rat liver brei is apparently much more vigorous than that of the rabbit, but the reaction appears to be carried only as far as maltose In contradistinction to the rabbit, glycogenolysis in the rat's liver brei is not accelerated by addition of serum In view of this finding it would seem unlikely that the reduction in liver glycogen in our serum injected rats was due to the presence of the diastatic enzyme of the serum

At the moment we are not in a position to discuss these results further Our belief is that the reduction in liver glycogen which follows injection of human serum into the rat is not the result of the introduction of amylolytic ferments, it does not appear to be in any way a peculiar property of diabetic serum We have not explored the possible connexion of the phenomenon with hormones which are known to affect the glycogen content of the liver, and which might be present in the injected serum

CONCLUSIONS

1 Injection of fasting human serum into rats is followed by a reduction in their liver glycogen

2 The percentage reduction is the same, whether normal or diabetic sera are used

3 Human serum accelerates glycogenolysis in the rabbit s liver brei in vitro in the rat no such effect is observed

4 It seems unlikely that the effects of the injection of serum on the rat s liver glycogen are due to amylolytic ferments in the serum

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LARYNGEAL DIPHTHERIA AND TRACHEOTOMY

By William Napier, M.D Glasg

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During the eleven year period 1926–36 there were in the City of Glasgow Fever Hospital, Shieldhall, 2528 cases of diphtheria of which 220 or 8·7 per cent. were laryngeal cases This category includes all patients having sufficient croup to require treatment in the steam tent Table I shows the ratio year by year of such cases to the total It is tending to fall being never under 10 per cent. before 1930 and only 3·5 per cent in 1933

Goodall (1928a) finds faucial to be associated with laryngeal diphtheria in about 18 per cent of hospital cases Of 5897 diphtheria cases admitted to the Edinburgh City Hospital during the years 1922–29 9·8 per cent were laryngeal (Benson 1931)

TABLE I

Diphtheria 1926–36 Incidence of cases (all types) laryngeal cases and tracheotomies with death rates

Year	Cases	Laryngeal cases and per cent.	Tracheotomies.	Death-rate per cent.	
				All cases	Laryngeal cases.
1926	[illegible]00	3 (11·5)	0	4·5	0
1927	28[illegible]	31 (11·0)	6	6·0	9·7
1928	250	25 (10·0)	8	4·0	4·0
1929	[illegible]53	26 (10·3)	8	7·9	15·4
1930	[illegible]97	29 (9·8)	7	5·4	3·4
1931	[illegible]25	11 (4·0)	0	2·2	0
1932	[illegible]06	16 ([illegible]·8)	5	5·3	18·7
1933	1[illegible]3	6 (3·5)	3	4·0	0
1934	141	10 (7·1)	4	[illegible]·8	10·0
1935	[illegible]61	[illegible]3 (8·8)	5	5·4	4·3
1936	40	0 (8·3)	3	4·2	5·0
	2528	220 (8·7)	55	4·9	6·8

Figures based on dismissals and deaths.

There is of course no relationship between the degree of croup and the extent of false membrane formation in the throat and nose In 145 patients or 65·9 per cent. of the laryngeal cases, croup was the only clinical manifestation of diphtheria while in 75 or 34·1 per cent it accompanied a faucial or nasopharyngeal infection.

Other observers record a lower proportion without faucial involvement Thus Gover (1918) found [illegible] 47·3 per cent of 112 cases, and Tolle (1930) only 23·1 per cent of 312 cases had membrane limited to the larynx.

Of the laryngeal diphtheria infections croup was severe enough in 25 per cent. to require surgical treatment The main purpose of this paper is to analyse *this group representing 55 consecutive* tracheotomy operations performed by me (with three exceptions) in Shieldhall Hospital.

INCIDENCE OF CASES REQUIRING OPERATION

The *annual incidence* appears in Table I The reduced prevalence of croup in the later years of the *investigation is reflected in a lower tracheotomy rate* which averaged 7 per annum in the period 1926–30 but only 3·3 thereafter This decline may be taken as an indication of earlier diagnosis leading to more prompt hospitalisation and effective treatment.

The *seasonal incidence* shows naturally a preponderance of cases in the winter months—viz :

Month	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
Cases	9	5	8	4	7	1	1	1	7	2	4	6

Age and sex.—The sexes are almost equally represented (Table II) The youngest children were aged 4½ 8 9 and 10 months and the oldest 7 and 9 years Approximately equal numbers were under 2, between 2 and 4 and over 4 years The deaths column of the Table shows that age is not a factor in determining prognosis

TABLE II

Tracheotomy Age and sex-distribution

Age.	Males.	Females.	Total.	Deaths
– 1	3	1	4	—
1– 2	7	7	14	6
2– 3	3	4	7	—
3– 4	3	9	12	3
4– 5	4	2	6	[illegible]
5– 6	1	4	5	1
6– 7	4	1	5	1
7– 8	—	1	1	—
9–10	1	—	1	1
—	26	9	55	14

Clinical types—Table III shows the frequency and effect on mortality of faucial and nasal lesions in association with croup The classification is based on the recent report (1936) on the nomenclature of diphtheritic infections tonsillar diphtheria indicating that membrane is limited to the tonsils and nasopharyngeal that it has spread to the soft palate pharynx, or nasal cavity This form, combining profound toxæmia with the obstructive danger has in operated cases a mortality double that of croup *without faucial or nasal* complication It is also noteworthy that operation was required in only 24 of 145 simple laryngeal cases, and in no less than [illegible] icated [illegible]

TABLE III

Tracheotomy Clinical types of cases

	Cases	Deaths.	Operation death-rate per cent.
Simple laryngeal (croup)	24	4	16·6
Croup + tonsillar diphtheria	[illegible]4	7	[illegible]0·2
Croup + nasopharyngeal diphtheria	7	3	4[illegible]·9

Duration of illness—The time elapsing between onset and admission to hospital, as obtained from the parents, may be tabulated

Duration	Cases	Deaths
1– 3 days	25	6
4– 7	21	7
8–12	9	1

No correlation between duration and degree of illness was established

Condition on arrival—Almost half of the patients arrived gravely ill, 5 being moribund, 13 were notably well nourished, and only 4 ill nourished, fat children appearing more prone than others to laryngeal obstruction Croup was not always severe, but became so within 24 hours Recession of the costal interspaces and epigastrium, one of its chief manifestations, tended to diminish as respiration failed, while a rising pulse rate indicated cardiac distress Pallor was more common than cyanosis Restlessness, a feature of the moderate case, gave place, as asphyxia become imminent, to profound prostration Bronchitis, enteritis, and albuminuria were occasionally present Only six initial temperature readings were over 101 degrees, while twenty were below 99 4

INDICATIONS FOR OPERATION

The routine treatment for the case of croup not in need of immediate operation, consists of the steam tent, light poultices to the neck and chest, and stimulants when necessary No restraint is imposed on the child, who is better sitting up in comparative comfort than lying down suffocating Serum, given intramuscularly, is used with moderation, since a large dose may aggravate obstruction by causing too rapid separation of membrane Save in the naso-pharyngeal type, 8000 to 12,000 units is usually sufficient

Most patients—75 per cent in my experience—respond rapidly to this treatment, croup disappearing within two or three days In the remainder respiratory obstruction increases so as to endanger life In every such case a point is reached when it is apparent to the experienced observer that spontaneous recovery will not take place Then is the time to operate Every hour of further delay leaves the child weaker and less able to survive operation Too often the practice appears to be that of Ker (1929b) who says there is often no need to operate till "the face becomes pale, the respirations more shallow, the recession less, and the pulse weaker and more rapid" For his maxim, "in hospital, interfere late," I would substitute, "in hospital, interfere as early as possible in the advancing case"

TABLE IV

Tracheotomy Time of operation

		Cases	Deaths
Immediate		9	4
1– 3	Hours after admission	15	3
3– 6		12	4
6–12		9	1
12–18		4	2
18–32		6	—
		55	14

Many patients reach the critical stage before coming to hospital Table IV indicates that nearly half in this series required operation within three hours of arrival.

Operation—A description of tracheotomy is unnecessary save that after the skin incision blunt dissection is relied on, thus avoiding troublesome hæmorrhage As to anæsthesia, children under 3 rarely require it, being already sufficiently anæsthetised by lack of oxygen Older children, who may be acutely conscious, nervous, and difficult to control, may be given a little chloroform, followed if necessary by ether Deep anæsthesia is altogether objectionable, not only for its depressing effect, but because it abolishes the cough reflex so essential for clearing the trachea before insertion of the cannula The amount of membrane expelled varies with the degree of invasion of the trachea and bronchi, but in some of the gravest tracheobronchial infections there may be none

RESULTS OF OPERATION

Of the 55 patients, 41 made a good recovery Immediate and striking improvement nearly always follows operation Children remain in the steam tent for two or three days, quickly becoming accustomed to the tracheal cannula Feeding presents no difficulty, the nasal tube being rarely required Every effort should be made to withdraw the cannula during the first week, otherwise it is likely to be retained for several Thus 33 children, or 80 5 per cent of recoveries, dispensed with it within a few days (Table V), while the remainder retained it for periods of 3 to 8 weeks The prolonged need for the tube, which was observed only in children under four years, takes one of two forms (1) Immediate laryngeal spasm, induced by fear Crying, cyanosis, and intense dyspnœa at once follow withdrawal, and end with reinsertion It may be obviated sometimes by leaving a tape tied round the neck, leading the child to think he is still wearing the tube (2) Asphyxia of more gradual onset, probably spasmodic also Symptoms are delayed for a few days, to appear as the tracheal wound closes For this condition I have used a skeleton tube with open back Its orifice is blocked for some time prior to removal, thus teaching the child to breathe through his larynx Much patience may be required before normal breathing is re established

TABLE V

Tracheotomy Recoveries, time of removal of tube

Age in years—	–1	–2	–4	–8	Total
3rd day	—	6	5	8	19
4th	1	—	7	4	12
5–6 days	—	—	1	1	2
3–4 weeks	—	2	2	—	4
6–8	3	—	1	—	4

An example of such a case is provided by the youngest patient in the series, a well nourished female infant of 4½ months, with clean throat, suffering from croup of 24 hours duration, sufficient latterly to threaten asphyxia Only the inner tube of the cannula would enter the trachea, and later a very small cannula was specially made Eight weeks elapsed before it was dispensed with, but convalescence was otherwise uneventful I can find no other record of successful tracheotomy in an infant less than six months old

Complications—8 children, whose ages are shown, had complications as follows

Paralysis of palate, 6 years, a naso pharyngeal case
Strabismus, 2 years, a tonsillar case
Discharging nose and ears 9 months
Cervical adenitis, 3 years
Jaundice 3 years, of a few days' duration.
Bronchopneumonia, 6 years, severe, wound remained open and septic after removal of tube
Whooping cough, 1½ years, incubating on admission
Septic arthritis, 1 year, a very puny child, knee joint opened and drained of pus

Residence in hospital varied from 24 to 87 days, with an average of 48 4 days All were discharged with neck healed and in good general condition

After-effects of Tracheotomy—Clarke (1930) has recently drawn a gloomy picture of the late effects of tracheotomy: 'Results such as pulmonary sequelæ retained tube granulations and ugly scars render it an operation to be avoided if at all possible That there is an association between it and subsequent tuberculosis has been asserted by Landouzy (quoted by Rolleston) but Rolleston (1929) was unable to verify any such association having seen a number of adults who had undergone the operation in childhood all free from tuberculosis

Late Results—An attempt to assess late results in the present investigation was made by inviting recently, through the parents all former patients to return for examination.

Of 41 children, 17 were untraced through change of address One was reported as living out of Glasgow in good health Two had died (1) seven months after leaving hospital while under anæsthesia for removal of tonsils; had been quite well in the interval (2) Seven years after tracheotomy of pulmonary tuberculosis which had its onset two or three years after operation All but two of the remainder were brought to see me

The 10 members of this group varied in age from 3 to 16 years with a maximum interval since operation of 11 years With few exceptions their parents described them as having enjoyed perfect health Two had suffered from bronchitis one for four successive winters after which it had not recurred ' the other almost every winter since tracheotomy eight years before with pneumonia superadded on three occasions One other instance of pneumonia and two each of measles and whooping cough were recorded

Huskiness the only throat symptom affected three children the first very *slightly*; the *second for three* years disappearing when school age was reached The third was a girl of 16 husky since tracheotomy at the age of 7 but much improved by a throat operation four years ago The condition suggested papilloma of the larynx.

All had a healthy appearance save two who were anæmic and one with signs of chronic bronchitis The cervical scar was very slight in 14 *less favourable in 5* four of whom had retained the tube unduly No parent referred to it as ugly the usual description being that it was "hardly noticed.

In brief only two patients suffered from severe respiratory disease in one case tuberculosis and there is no evidence to associate it directly with the tracheotomy operation

FATAL CASES

There were 14 cases eight being males and six females death supervening from one hour to 22 days after operation. Table VI shows the relationship of age to time of death. Only one child failed to survive for 12 hours many of the others showing for a time much improvement The association of clinical type with mortality has been referred to above Death following tracheotomy results from one of three conditions

TABLE VI

Tracheotomy Fatal cases time of death after operation

Age in years—	–	–4	–7	–10	Total
Under 12 hours	—	—	—	1	1
12– 4	1	—	1	—	2
1– 2 days	1	1	1	—	3
2– 7	2	—	1	—	3
7–14	1	2	1	—	4
22	1	—	—	—	1

Tracheobronchial diphtheria—Operation gives temporary benefit by relieving the laryngeal obstruction but as the lower air passages cannot be cleared of asphyxia is inevitable There were four such cases, aged $1^{4}/_{12}$, 3 4 and 4 years all gravely ill from the beginning In two the fauces were clean, in two extensively coated. Tracheotomy was within three hours of arrival, indicating urgent croup; practically no membrane coughed up Recurrent choking fits ended in death 24 hours 2 4 and 5 days later

Bronchopneumonia—The four children aged $1^{1}/_{12}$, $1^{3}/_{12}$ $1^{9}/_{12}$ and 5 years who died of this complication had faucial lesions of moderate degree and required early operation Complete relief of croup was followed however by delay in healing of the tracheal wound, a factor clearly associated with infection of the lungs Thus one child retained the cannula till death two others dispensed with it on the third day but continued to breathe entirely through the opening; in the fourth it was withdrawn on the 16th day leaving a very septic, gaping wound. Rapid deterioration attended the onset of pneumonia, which led in one case to streptococcal empyema, in another to gangrene of the lungs Deaths occurred on the 7th 0th 12th and 22nd days Bronchopneumonia following tracheotomy, while very grave is not inevitably fatal A recovery has been mentioned giving a mortality rate in this series of 80 per cent

Toxæmia—The six patients in this group aged $1^{9}/_{12}$ $1^{10}/_{12}$ 3 3 6 and 9 years exhibited toxæmia in varying degree Four reached hospital moribund or gravely ill Extensive false membrane formation on the fauces was the rule Operation times—viz. 1 4 5 10 14 and 18 hours after admission indicate that obstruction was not always dangerous at first but progressive Three patients required anæsthesia; two collapsed on the table but revived one of them—aged 9 a grave laryngonasopharyngeal infection—dying an hour later This case apart death was always sudden, and followed a period of improvement entirely free from either obstructive or pneumonic symptoms In three cases collapse was within 16 and 30 hours of operation, in two postponed till the 9th and 10th day respectively by which time the tracheal wound was healing Pharyngeal paralysis preceded death by 48 hours in one instance

Sudden cardiovascular failure common in severe non obstructive diphtheria results from toxæmia, in the production of which diphtheria of the larynx plays a very small part In the present examples anæsthetic and surgical shock may be pointed to as contributory causes but would not account for collapse after a week's interval I am convinced that death of at least three patients was entirely of toxic origin and in no way related to the laryngeal lesion

MORTALITY OF LARYNGEAL DIPHTHERIA

Laryngeal diphtheria is generally regarded as a very serious condition with much higher mortality than other forms of the disease Ker (1920a) gives the death rate in Edinburgh City Hospital as never less than 11 per cent. with an average of 20 to 25 per cent. More recently Benson (1931) has a rate in Edinburgh varying from 29 2 in 1923 to 12 8 per cent. in 1930 Litchfield and Hardman (1923) in 106 cases in New York had a 13 per cent. mortality Each of these observers relies on intubation

In the present series Table I shows comparative figures for diphtheria (all types) and for laryngeal diphtheria In the former category deaths were highest in 1929 (7 9 per cent) and lowest in 1931 (2 2) with a rate for the whole period under review of 4 9 per cent The rate for laryngeal cases fluctuates much more widely from over 18 per cent. to zero for the whole period it is 6 8 per cent The difference of only 1 9 suggests that the gravity of laryngeal as compared with other forms of diphtheria has sometimes been exaggerated Hogan's (1921) statement in particular I find difficult to accept—namely that 82 1 per cent of diphtheria deaths in Baltimore have been due

In this series of 124 deaths only 15, or 12 1 per cent., Objection may be raised that the reason for the low mortality is that not all the cases quoted were diphtheritic Admittedly no routine culture or inspection of the larynx was carried out, but it is affirmed that the clinical picture of croup was identical whether or not the presence of false membrane on the fauces made the diagnosis certain Occasional cases of retropharyngeal abscess, laryngismus stridulus, and foreign body received as laryngeal diphtheria are of course excluded Membranous croup has been ascribed to the streptococcus, but the deep injection of the fauces that would suggest such infection was hardly ever seen, and simple catarrhal laryngitis is rarely severe enough to simulate diphtheria of the larynx Very few cases are likely, therefore, to have been non diphtheritic, and the effect of their inclusion on the mortality rate is negligible Elimination of one third of the cases without visible membrane would raise it only to 8 7 per cent

Unoperated cases—It must be emphasised that in a series of hospital treated patients, deaths are limited almost entirely to those undergoing operation Facilities are always at hand for the relief of obstruction, at least temporarily Theoretically no patient should die in hospital unoperated, in practice admission may be too late for treatment, surgical or otherwise, to be of any avail Such cases are few, I can record only one

Operation fatality rate—The 14 deaths following tracheotomy represent a mortality of 25 5 per cent, or, if the three regarded as purely toxæmic be excluded, 20 0 per cent

Intubation—Published statistics relating to croup refer almost entirely to intubation This alternative procedure avoids an external wound, but requires more constant supervision, and has often to be followed by tracheotomy Thus Goodall (1928b) reports that 159 of 454 intubations in the Eastern Hospital, London, were followed by tracheotomy, with a combined mortality of 22 5 per cent Primary tracheotomy, reserved apparently for the severest cases, had a mortality of 40 9 per cent, the rate for all cases taken together being 26 6 per cent Ker (1929c) quotes operation fatalities in Edinburgh at about 28 per cent over a ten-year period prior to 1912, rising later to reach, at one time, over 40 per cent Schamberg and Kolmer (1928) give the mortality in the Philadelphia Hospital for the years 1903–13 as 35 6 per cent Litchfield and Hardman (1923) in a series of 18 patients, had a 44 4 per cent mortality

Aspiration—The practice of direct inspection of the larynx, combined with aspiration of membrane by means of a suction apparatus, was introduced by Joe (1929) to this country from the Willard Parker Hospital, New York Considerable value is ascribed to it there, in that the number of cases requiring operation is greatly decreased A fall in death rate of intubated cases from 54 per cent in 1922 to 16 6 in 1927 is attributed partly to suction and partly to milder diphtheria, but in 1928 it rose to 28 5 and in 1929 to 37 5 per cent Litchfield and Hardman (1923) recommend aspiration especially for cases with low membrane, which cannot be reached by intubation or tracheotomy Benson (1931) records favourable results, but mentions certain limitations to its use, and indicates the danger of collapse from repeated suction

It may be said that the aspiration method is still on trial Conclusive evidence in its favour will be furnished only by a substantial drop in the case mortality rate, and this has yet to be recorded Hitherto it has been advocated only by protagonists of intubation, but it might be associated equally well with tracheotomy

Meanwhile, in the absence of facilities for aspiration, I have presented the case for tracheotomy alone, and submit that it gives better results than intubation in the treatment of laryngeal diphtheria

SUMMARY

1 Of 220 cases of laryngeal diphtheria, tracheotomy was performed in 55, with case mortality rate of 6 8, and operation death rate of 25 5 per cent

2 Early operation is advocated, as affording the best chance of success

3 Serious after-effects are rare, a case of pulmonary tuberculosis is recorded

4 Pneumonia, toxæmia, and unrelieved obstruction contribute alike to the mortality

5 The results compare favourably with the published results of intubation, indicating tracheotomy as the better operation for the relief of croup

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INHIBITION OF MENSTRUATION AND OVULATION BY MEANS OF TESTOSTERONE PROPIONATE

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In 1922 Evans and Long[1] reported that the administration of fresh anterior hypophyseal tissue to normal cyclic female rats leads to the suppression of œstrus, a finding which they correlated with the presence of abundant lutein tissue in the ovaries of the treated animals These experiments have been confirmed and extended by a number of workers,[2] and it is generally accepted to day that the inhibition of the cycle is due to the luteinisation that is stimulated by the gonadotropic hormone of the anterior lobe Inhibition of œstrus also results from the administration of progestin, a fact which Papanicolaou[3] demonstrated in 1926, and which later workers have substantiated, using crystalline progesterone[4] Œstrogenic substances have a similar action,[5] and so too have crude testicular extracts[6] and crystalline male hormones[7] It thus appears that, when given in adequate amounts, any of the sex hormones will stop the œstrous cycle

The gonadal hormones appear to be similarly effective in the case of the menstrual cycle, which for all purposes may be regarded as a specialised type of œstrous cycle Thus œstrin inhibits menstrual bleeding both in monkeys[8] and women[9] Progestin[10] has the same action, and Menninger Lerchenthal[11] has recently reported that the administration of over

300 capon units of a non crystalline male hormone preparation delayed menstruation in a 40 year-old woman for 6 to 8 days The observations recorded below show that adequate quantities of the male hormone ' testosterone propionate will suppress menstruation for apparently indefinite periods in normal mature rhesus monkeys (*Macaca mulatta*)

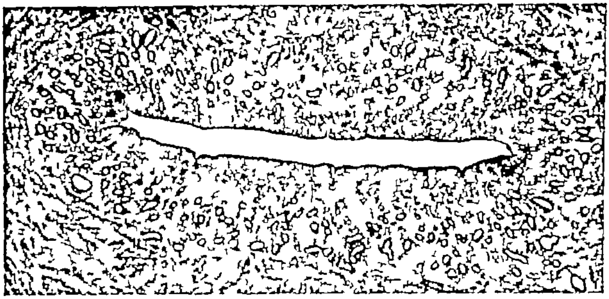

FIG 2 —Slightly involuted endometrium of OM 28 after 210 days of treatment with testosterone propionate (× 15)

SUPPRESSION OF MENSTRUAL BLEEDING

The subject of the first experiment was a mature monkey (OM 28) weighing 5 2 kg The seven menstrual cycles which preceded the injections were 30 20 23 25 26 23 and 25 days long respectively Testosterone propionate (25 mg) was given twice weekly beginning on the second day of the eighth cycle and the treatment was continued for 210 days when the animal was autopsied Uterine bleeding did not occur during this period and the vaginal washings became clear about a fortnight after the start of the experiment Occasionally they contained mucus In all the animal was given 1 5 g of the hormone

At autopsy the ovaries were very small and contained neither corpora lutea nor any follicles more than about 2 mm in diameter (Fig 1) Before its death the monkey had been injected with colchicine a procedure which assists in the determination of cellular proliferation since the drug arrests and fixes dividing cells Examination of serial sections showed that primordial follicles were as numerous as they are normally and that there were many mitotic figures in the granulosa and thecal cells Follicles apparently ceased to grow however after reaching the resting stage of development when they underwent atresia Many of the smaller follicles are also undergoing atresia but the ova in most of the small and primordial follicles are apparently healthy There is no recognisable luteal tissue in either ovary Both contain patches of very lightly-staining large cells whose cytoplasm appears to consist mostly of clear droplets These cells occur in somewhat œdematous areas of the ovarian stroma and it is possible that they represent some peculiar transformation of old luteal tissue This last characteristic is somewhat abnormal but otherwise the ovaries are no different from the inactive ovaries met with in lactation

The uterus is small and the endometrium is shallow (Fig 2) The glands are of the interval tubular type although some are distended They are not secreting and their basement membranes are somewhat diffuse The glandular and surface epithelium is fairly low and the cells a few of which are in process of division contain relatively large vesicular nuclei The stroma is not very vascular and is densely packed, especially in the superficial zone There are no signs of degeneration anywhere in the uterus which is not as much involuted as is for example the uterus of lactation.

The cervix is secreting profusely and its epithelial elements vary in height The vaginal epithelium is not cornified In most regions it is no more than four to six cells deep The uterine tubes and mammary glands are also inactive

A similar series of injections was given to a second normal mature rhesus monkey (OM. 77) which at the start of the experiment weighed 5 3 kg Treatment was begun on the second day of a cycle The preceding seven cycles were 43 45 25 22 28 22 and 25 days long respectively Treatment was stopped after 114 days and when a total of 0 85 g of testosterone propionate had been administered Eight days later uterine bleeding set in—for the first time since the start of injections It demarcated a period of 122 days amenorrhœa The animal was given colchicine and autopsied on the second day of bleeding

The ovaries are in the same condition as those of OM 28 (Fig 1) except that there are many more mitotic figures in the follicles (Fig 3) The uterine mucosa is of the interval type and menstruation is in progress (Fig 4) The endometrium is better developed than that of OM 28 and there are many mitotic figures in both the glandular epithelium (which is more columnar than in OM. 28) and the stroma (Fig 5) The cervical glandular cells are very

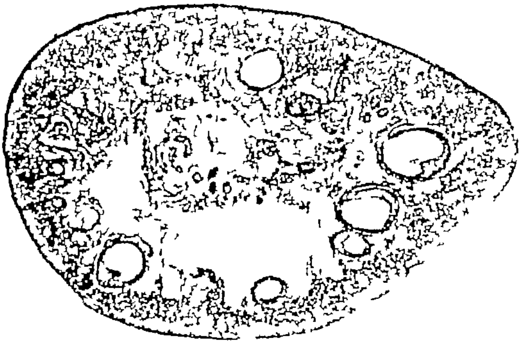

FIG 1 —Ovary of OM. 77 There are no large follicles and there is no evidence of recent ovulation. (× 10)

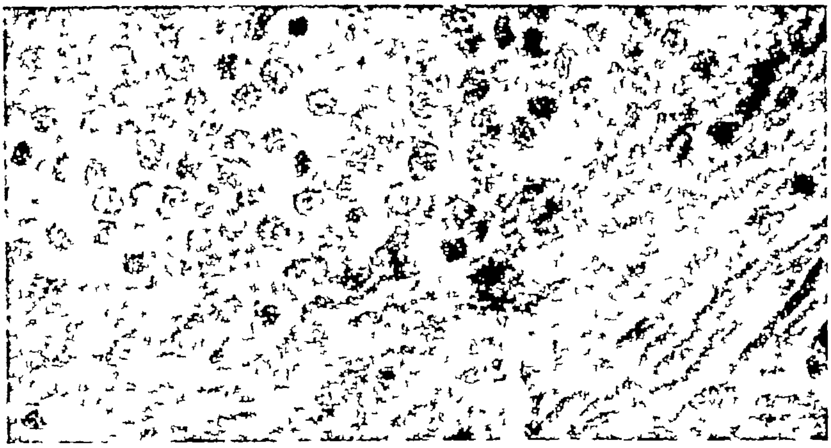

FIG 3 —Mitotic figures in the granulosa and theca of a follicle of OM 77 (× 600)

tall and are also secreting profusely (Fig 6) The vagina is like that of OM 28 (Fig 7)

The extensive signs of cellular proliferation in the ovaries of this animal, as compared with OM 28, indicate clearly that in the week following the last injection of testosterone propionate they had responded readily to endogenous follicle-stimulating hormone The endometrium, too, shows clear signs of œstrogenic stimulation, and it is thus plain that the inhibitory effects of the male hormone are transient, and that, in the dosage in which it was given, its effects do not last longer than a week The healthy appearance of the reproductive organs and their responsiveness to the altered conditions following the end of the experimental treatment show too that they were in no way injured by the injections

The occurrence of bleeding so soon after the cessation of injections is difficult to explain, unless it be assumed that the amount of male hormone given was no higher than the threshold dose for suppressing the cycle, and that a certain amount of endometrial growth had occurred during the last phase of the treatment A possible analogy for this bleeding is the menstruation that marks the end of lactation anœstrus in monkeys and which sometimes precedes any external signs of œstrogenic stimulation [12]

The ovaries of monkeys and rats appear to react differently to sex hormones As noted above, the inhibition of œstrus in rodents by means of gonadotropic extracts of the anterior pituitary is generally attributed to the stimulation and persistence of luteal tissue When the cycle is suppressed by means of œstrin, the mechanism of inhibition varies according to the amount of hormone given Moderate doses lead to persistent vaginal cornification, and to "atrophy" of the ovaries the ovarian change according to Moore and Price [13] being an effect of the depressing action of œstrin on the gonadotropic functions of the pituitary Large doses cause luteinisation [14] and the corpora lutea thus stimulated may over ride the injected œstrin in the production of changes in the accessory reproductive organs One interpretation of the effect of large doses is that œstrin depresses the follicle stimulating powers of the anterior pituitary (possibly by stimulating the production of an "antagonist" [15]) and that it enhances the pituitary's luteinising action Luteinisation of the rat ovary may also be caused by both progesterone and testosterone propionate [16] Thus ovarian activity—i e, luteinisation—is concerned in the inhibition of œstrus in the rat in each of the hormonal methods by which its suppression can be achieved

Such does not appear to be the case in the inhibition of menstruation Ovulation is suppressed during the time normal mature monkeys are injected with œstrin,[8] while ovarian action is undoubtedly inhibited by male hormone in the amounts in which it was given in the present experiments Testosterone propionate thus appears to provide a means for securing and controlling temporary sterility

PROGESTATIONAL CHANGES

Klein and Parkes [17] have found that methylated and ethylated testosterone and dihydrotestosterone have a progestational action on the rabbit uterus of about 1/20 the potency of progesterone Testosterone has a similar, but much less pronounced, action The progestational properties of testosterone propionate were therefore tested on an immature normal rhesus macaque (OM 192), and two mature spayed monkeys (OM 107 and OM 183) of the same species Each animal was first injected daily for 14 days with increasing amounts of œstrone to sensitise the uterus Testosterone propionate was then administered for 14 days, the most given in any experiment being 10 mg daily None of the animals

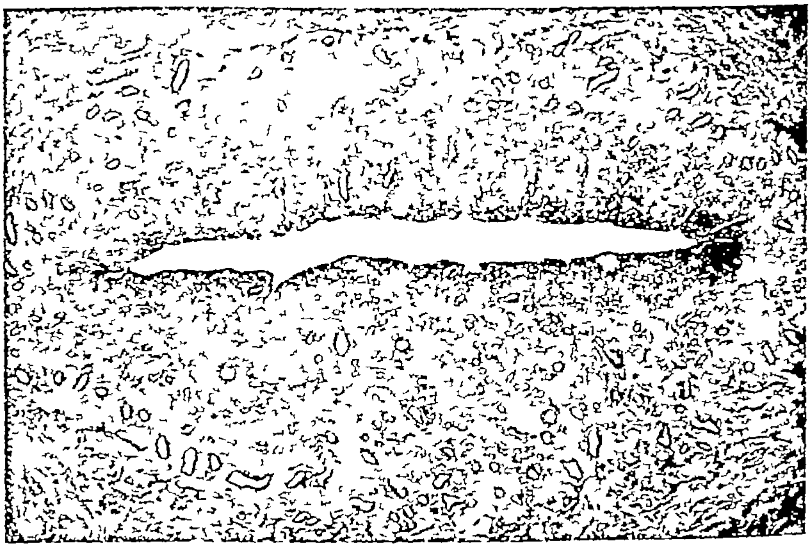

FIG 4 —Endometrium of OM 77 on the second day of menstruation which began seven days after the end of 114 days treatment with testosterone propionate The endometrium shows many signs of proliferation and is much deeper than that of OM 28 (× 15)

shows any progestational changes and in each the endometrium is in a healthy interval condition

GENERAL AND EXTERNAL EFFECTS OF TESTOSTERONE PROPIONATE ON FEMALE MONKEYS

All the monkeys referred to above continued in excellent health during their treatment with male hormone and in so far as it was possible to judge the general vitality of at least two was enhanced. Sections were prepared of almost every organ in the body of three animals that were given the hormone for four months or longer (OM 28 OM 77 OM 193) No tissue appeared abnormal

Male hormone has a so-called masculinising effect on the external genitalia of monkeys an effect which essentially comprises enlargement of the clitoris (This change which has also been noted by Hamilton[18] becomes obvious about a fortnight after treatment begins Growth occurs both in the corpora cavernosa and in the preputial skin and the clitoris in one animal was 2 cm long when pulled out In normal animals the exposed part of the clitoris is rarely longer than 1 cm The glans and frenulum become well-differentiated

The amount of growth in the clitoris was no greater in an animal which was given twice the amount of testosterone propionate that OM 28 and OM 77 received This monkey (OM 193) a prepubertal specimen was given 100 mg of the hormone a week for five months and at the end of the experiment the clitoris was no more than 1 cm long The other external genital organs were normal

It has been shown that male hormone stimulates the periurethral glands of female rats the glands when active resembling the prostatic glands of the male[19, 20] In view of this observation, serial sections of the entire urethra of OM. 28 OM 77 and O.M 193 were prepared They failed to reveal any peri urethral glands A lobule of gland similar to prostatic tissue was however found dorsal to the vagina of OM 193 In view of its position and of the absence of a similar structure either in other experimental animals or in control specimens its presence is regarded as an anatomical anomaly

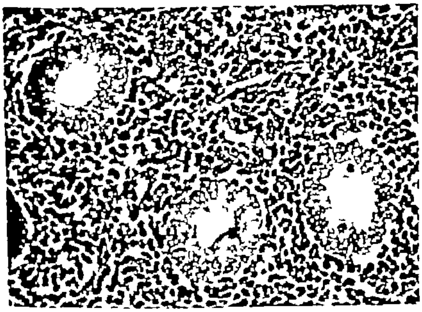

FIG 5 —Uterine glands of OM 77 showing mitotic figures. (× 305)

Sections of the broad ligament failed to show any development of Gärtner s duct

A further external effect of testosterone propionate in the female rhesus monkey is reddening of the sexual skin The change which in the youngest animal (OM 193) was accompanied by some œdema of the pubic lobes of skin develops gradually and is in all respects similar to the development of colour in normal males of the species[21] These external changes would not be expected to occur in species like Man in which there is no sexual skin More over histological section showed that no appreciable thickening of the epidermis such as takes place under the influence of œstrogenic stimulation occurs

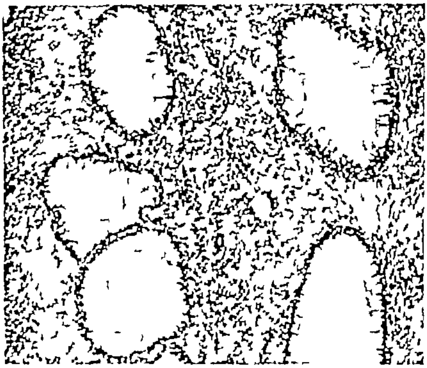

FIG 6.—Actively secreting glands of cervix uteri of OM 77 (× 85)

The nipples do not appear to increase in size

During growth the clitoris of the normal rhesus monkey moves backwards from a position in front of the callosities until in mature animals it generally lies on or just behind a line connecting the anterior margins of the callosities[19] A further growth change in the conformation of the hinder region of the rhesus is rotation of the callosities In older animals the angle formed by the intersection of the long axes of the callosities is much more obtuse than in younger animals[19] Observation of the two older and of the one young monkey that were injected for prolonged periods showed no effect of the male hormone on either of these two characters

CONCLUSION

Monkeys are unsuitable subjects either for the investigation of hair growth or for the study of alterations in voice. No changes in these characters have however been reported as a result of the clinical use of testosterone propionate for the alleviation of certain disorders that follow ovariectomy in women[22] Moreover the degree of proliferation in the hair follicles of the monkeys treated with male hormone as determined by histological section was much less than that seen in monkeys that have been injected with œstrin Thus since the masculinising effects of testosterone propionate appear to be both slight and controllable it would seem that the hormone provides a method well worth clinical investigation of securing temporary sterility and of controlling uterine bleeding

SUMMARY

The administration of 25 mg of testosterone propionate twice weekly to normal mature female rhesus monkeys stopped the menstrual cycle during the period of injections (up to seven months) The internal reproductive organs are not injured by the treatment and in one animal menstruation restarted about a week after the last injection Follicular growth and luteinisation are both inhibited Apart

from enlargement of the clitoris, no other changes of clinical significance occurred

It is suggested that testosterone propionate may be of clinical value for the induction of temporary sterility and the control of uterine bleeding

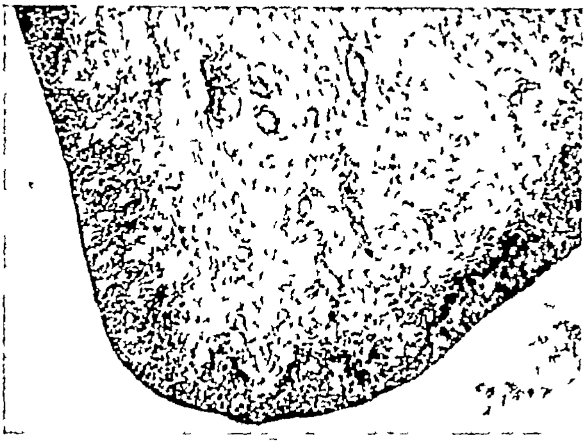

FIG 7 —Vaginal epithelium of OM 77 The shallow epithelium shows many signs of proliferation (× 85)

My best thanks are due to Dr K Miescher, of Messrs Ciba Ltd , for his kindness in supplying the testosterone propionate used in this study The monkeys were bought with the aid of grants from the Eugenics Society and the Medical Research Council

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WEST KENT GENERAL HOSPITAL, MAIDSTONE — Lady Baldwin will open the new maternity unit at this hospital on Oct 26th The unit is being established by the corporation and hospital authorities on a basis of equal costs

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ABSORPTION AND EXCRETION OF IRON

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THE human body contains a number of inorganic constituents, and it is generally considered that the amount of each remains more or less constant from year to year This constancy is brought about by the fact that intake and output balance Now, while the intestine is the chief site of absorption, there are two main paths of excretion—via the kidneys in the urine, or via the intestine in the fæces If any substance that has been taken by mouth is excreted in the urine it must have been absorbed into the blood stream If it is excreted in the fæces it may have been absorbed and re excreted, or it may never have been absorbed at all Some inorganic elements—e g , sodium and potassium—are excreted mainly by the kidneys Others—e g , iron—are excreted mainly in the fæces A third group—e g , calcium—fall into an intermediate category

Sodium is an element eaten daily in large amounts The fæces as a rule contain only very small quantities, about enough to make them isotonic with the blood, so that practically all the sodium that is eaten must be absorbed either in the small or large intestine [111] The distribution of sodium in the body is limited mainly to the extracellular fluids In health the volume of these fluids and the level of sodium in them vary very little from day to day, so that the body has practically no storage capacity for sodium Its excretion, however, is so efficiently regulated that the body can easily maintain itself in health and in sodium balance on intakes varying from 0 4 to about 10 grammes a day During McCance's [57] experiments on sodium chloride deficiency the daily excretion of sodium in the urine varied from 0·01–4 5 g , whereas the output in the fæces underwent no significant variations and was generally about 0 1 g a day

Hence, the amount of sodium in the body is controlled within narrow limits by a process of unlimited absorption, an absence of storage capacity, and a very finely regulated excretion

IRON METABOLISM EXPERIMENTAL FINDINGS

No theory of iron metabolism can possible explain all the experimental observations because many of them are mutually contradictory There are, however, certain generalisations which any satisfactory theory must be expected to cover, and which will now be discussed Within these generalisations there may be contradictory observations on points of detail which will be neglected if they are immaterial to the main issue

1 *The fæces contain amounts of iron that vary directly with the amounts in the food, and are generally approximately equal to them* [23 51]—The whole problem of iron absorption and excretion arises from this fact, because it is impossible to tell from balance experiments or from microscopical studies how much of the ingested iron has passed through the intestine unabsorbed, and how much has been absorbed, only to be re excreted

2 *The urine contains very little iron, and the amount is generally considered to bear little or no relation to the*

amount in the food—This has been recognised for many years[53, 54] According to some observers[17, 18, 53], the urine of healthy men contains no iron at all. This, however has not been the experience of most analysts[10, 27, 38, 63, 69] McCance and Widdowson[66] found an increased excretion of iron in the urine during and after treatment of a polycythæmic patient with phenylhydrazine. It has been shown also that after iron salts have been injected intravenously a small percentage of this iron rapidly appears in the urine, but that excretion only continues for about 20 minutes.[26, 46, 47] It is probable therefore that the kidney would readily excrete inorganic ionised iron and in variable amounts if it ever had the opportunity of doing so; that it does not do so under ordinary conditions suggests that the concentration of free iron in the plasma is always maintained at a very low level by the storage organs In other words, the moment the concentration of free iron in the plasma rises the excess is competed for by the storage organs and the excretory organs The former always win. It is also generally recognised that free hæmoglobin circulating in the plasma above a certain concentration is readily excreted by the kidney[7, 18, 25, 38]

3 *The body has considerable storage capacity for iron.*[15, 16, 64, 65, 66, 67, 68, 78, 79, 80, 81, 110]

It will be observed that as so far discussed the metabolism of iron differs sharply from that of sodium

4 *It is certain that in some way iron must be transported very efficiently about the body*—During pregnancy for instance about 350 mg of iron are transferred to the fœtus from the mother Again, the healthy infant is born with an excess of hæmoglobin in its blood. This excess it converts largely to inorganic iron,[66] and it is unlikely that the conversion or the subsequent resynthesis takes place only at the sites of storage During growth iron must be absorbed and carried to the blood forming organs for the manufacture of new red cells for the developing body Between the first and the twenty-first year about 4000 mg. of iron are retained. Distributed over 20 years this amounts to an average retention of 1 8 mg a day Further iron, injected into animals or taken by mouth is stored in large amounts in certain internal organs[46, 64, 79] and the post-mortem findings in hæmochromatosis show that during life there must have been continuous transport of iron from the gut to various parts of the body[66, 88]

In spite of the confusion about the amount and state of iron in the plasma[3, 4, 5, 6, 31, 33, 44, 46, 55, 56, 60, 61, 75, 87, 88, 91, 106, 107] it is natural to suppose that the plasma is the medium for the transport of iron. This view is supported by the work of Bing and others[11] and of Heilmeyer and Plötner[37]

Phagocytes, leucocytes, lymph, and other media of transport which have been suggested[53, 113] scarcely seem sufficiently physiological or indeed efficient enough to provide for the demands of the body This point of view and other arguments in its favour may be found set forth in a short article by Moore and Doan.[65]

The whole question of plasma and urinary iron, their relationship to each other and their possible fluctuations during disease or treatment clearly require detailed and critical investigation.[11, 65] Transport by the plasma suggests that an equilibrium exists between the storage organs, the plasma and all the cells of the body It also suggests that any variation [illegible] in the amount of iron excreted, either by the intestine or in the urine, reflects a variation of plasma iron in the same direction. While recognising that some such generalisation as this must be true our knowledge at present scarcely enables us to visualise the details.

5 *It is apparently possible in health to maintain adults in iron balance on any intake likely to be derived from natural foodstuffs*[53]—Earlier work, in which negative balances were sometimes obtained[46, 67, 101] has been confirmed by Barer and Fowler[8a] but not by other recent investigators. According to Lintzel[52] balances can be maintained, at any rate for a short time on intakes as low as 1 mg per day Neither Fontes and Thivolle[24] nor Nicolayson[71] were able to maintain dogs in equilibrium on intakes as low as this, so that there may be species differences. There may also be age differences, for it has been shown that on their normal (small) iron intakes, babies were in negative iron balance during the first two months of life.[41, 99] Lintzel[52] obtained iron balances on intakes up to 60 mg a day and Reimann, Fritsch and Schick[84] found very slightly positive balances when 100 mg of iron a day were administered to normal adults The work of Dry[21] Brock and Hunter[14] and of Fowler and Barer[25a] strongly suggests that on intakes of 500–1000 mg of iron a day positive balances would always be obtained.[53, 65, 99] It is true that positive balances were not obtained by Müller[69] but a critical examination of the figures given by this author[70, 71] suggests that there was something seriously wrong with his technique. One patient, for example is reported to have had 4·05 million erythrocytes, and a hæmoglobin of 80 per cent. (Sahli). The blood iron was 148 mg per 100 c.cm., and on an intake of liver plus 1 6 g of iron daily the patient had a negative iron balance of over 2000 mg.

6. *There are characteristic differences between the iron exchanges and the blood picture of the two sexes*—Women tend even in health to have less hæmoglobin in their blood than do men.[76, 82] Further they are much more frequently found to be anæmic. Davidson and others[19] in a study of the incidence of anæmia among the poorer classes in Aberdeen found that among the men, even on low iron intakes, anæmia was conspicuous by its absence. Among the women, on the other hand, anæmia was found in nearly half the subjects Associated with these observations, and possibly in part explaining them is the fact that women lose 10–40 mg of iron each month in menstruation[3, 49, 74] pregnancy and parturition result in a loss of about 400 mg

7 *Anæmias of the hypochromic type can be cured by the administration of iron so that in these circumstances iron must be absorbed*[4]—Small doses are sufficient in normal persons and animals, and in fact the absorption and utilisation of even the small amounts of iron in food may be extraordinarily efficient under these conditions.[108, 114] Some anæmias can only be cured by enormous doses of iron, but it would be wrong to suppose that this is due to any failure of absorption, since it has been shown that when the intakes are high large amounts of iron are continuously being absorbed[14, 25a, 56] Iron may be much better retained by anæmic than by normal persons[65]

8 *It is believed that about 3 3 per cent. of the total hæmoglobin of the blood is destroyed every day*—In a 70 kg man this involves a katabolism of about 29 g of hæmoglobin or 90 mg of iron, some of which certainly passes through the inorganic state. This turnover of iron is of a very much higher order than the daily intake and output

9 *Very little or no iron is excreted during or following sudden hæmolytic anæmias.*[7, 23, 65, 67, 68]—Much of the iron set free appears to be stored in the internal

organs, mostly in inorganic form[67] The small negative iron balances obtained by Stearns and McKinlay[94] during the period of "physiological hæmoglobin destruction" can hardly be said to contradict this, for their own figures show that there was little change in the total amount of hæmoglobin in the babies' blood.

10 There are two diseases associated with an excess of iron in the body In *hæmochromatosis* immense deposits of inorganic iron are found in the liver, pancreas, skin, and other parts of the body Iron is not deposited in all these sites when it is forced into the body by injection[66, 81, 95] Hæmochromatosis, therefore, is not simply due to faulty iron elimination, although this has been suggested.[21] It is important to note that in spite of the enormous deposits of iron in the organs there are usually subnormal amounts of hæmoglobin and of iron in the blood[92] In *polycythæmia rubra vera* the number of red cells and the amount of hæmoglobin are very greatly in excess of normal, so much so that the amount of iron in the blood may be doubled The red cells may be increased more than the hæmoglobin[58] In other words, there may be signs of a deficient iron supply to the blood forming organs This is indeed not surprising when the demands which are being made upon the iron supplies are considered In addition to these two diseases there are others in which there may be a great excess of iron in the solid organs Pernicious and aplastic anæmia, and Cooley's erythroblastic anæmia[113, 114] are good examples It has not been proved in these instances that the total amount of iron in the body is increased The deposition in the organs may have taken place entirely at the expense of the blood, and one must always remember that before death these cases have generally been treated with large doses of iron

CURRENT THEORIES

"The site of absorption is the entire intestinal tract, although the duodenum and a portion of the upper intestine probably play the major rôle Elimination is almost entirely by *intestine*, especially by the colon "[89] This theory is really a legacy of the histologists of the nineteenth century,[1, 37, 103, 105] although it has been strengthened on histological grounds from time to time,[12, 83] and is still generally accepted[29, 102, 108, 109] The *life and soul* of this theory has undoubtedly been the fact that there is no morphological distinction between absorption and excretion[104, 108] To most people the term "excreted by the intestine" undoubtedly implies regulated excretion[18, 32, 59]—i e , that the gut performs for iron the function which the kidney performs for sodium, amd with equal facility It does not necessarily follow from this that iron is always being *freely* absorbed and excreted, but it is implied that *appreciable* absorption and excretion are always in progress[24] When the accepted experimental data on iron metabolism are examined in the light of this theory, certain difficulties at once arise These difficulties are intensified by a study of recent work on the function of the intestine Thus, while the theory explains well enough the avenues by which iron leaves the body, and the results obtained from balance experiments at moderate levels of intake, it breaks down completely when examined in the light of the following considerations

(*a*) Extensive intravital hæmolysis, however brought about, which is known to set free large amounts of iron in the body, does not appreciably increase the excretion[58, 67, 86]

(*b*) When iron is injected into rats in such amounts that the normal iron content of the body is doubled, trebled or more, practically the whole of the injected iron may be recovered from the organs[54] Gottlieb's[33] solitary experiment showing that guinea pigs do excrete injected iron by the bowel, is still awaiting confirmation If corroborated, it suggests species *differences*

(*c*) If the body ever tended to excrete unwanted iron, it is difficult to explain why one should find such large quantities of free iron stored in the livers of patients who have died of pernicious anæmia The iron has not been required for the formation of hæmoglobin (in such amounts) for many years One would have expected, therefore, that it would have been slowly excreted if any organ of the body had the capacity or opportunity for doing so

(*d*) If appreciable absorption takes place from the intestine every day and is followed by regulated excretion, it is not easy to see why simple anæmias only appear to arise when there is some drain on the body iron Thus, men are very rarely anæmic[19] unless there is some chronic source of blood loss Women are frequently anæmic, and there is evidence that the lower hæmoglobin level of so called "normal" women may be pathological rather than physiological[116] Why should this be so? Granted that their intake of iron is lower than that of men, and that they lose about 20 mg of iron each month during menstruation, they have to absorb less than 1 mg of iron a day to make good this loss Surely the poorest of diets is sufficient to supply this Again, why is anæmia[31a] so prevalent in women who have borne children if appreciable amounts of iron are absorbed each day?[10] If the intestine regulates iron excretion it should be able to conserve the body iron The fœtal demands for sodium, which are supplied from the maternal blood, do not make the mother sodium deficient, even if her sodium intake is low, for her kidney conserves her body sodium to exactly the extent required

None of these observations suggests an active regulatory excretion Further, the best chemical work indicates that the large intestine does not excrete iron in appreciable quantities[45] and takes no part in regulating the amount of iron in the body[72, 111] This throws the onus of regulated iron excretion on to the small intestine,[45, 59] but even this is rendered most improbable by Nicolayson's[72] experiments on dogs with isolated colons In these animals no extra excretion of iron by the *small* intestine *followed the* daily injection of 67 mg of iron.

A NEW THEORY OF IRON METABOLISM

While admitting at once that some of the iron in the fæces must come from excreted juices and abraded cells, and also that the amount and variability of the iron so excreted may vary widely from species to species, it is suggested on the basis of work already referred to that in man the quantity of iron lost in this way is small and constant (see also Christiansen[17]) Taken together with the accepted facts about the excretion of iron in the urine, it follows that the total excretion of iron is small and relatively fixed in amount

Now obviously negligible and non regulatory excretion, even with great storage capacity, *must* be coupled with limited and to some extent controlled absorption The factors governing absorption must therefore be considered, and the simplest possible theory has been accepted in the first instance as the working hypothesis The possible effects of calcium phosphorus hormones or vitamins on iron absorption or excretion will not be considered in any detail[43 77 88] The same applies to the effect of the thyroid hormone or vitamin C on hæmatopoiesis[9 25 84] and sexual differences in the storage of iron[37a 100] It is accordingly suggested that the absorption of iron is conditioned mainly by the relative concentrations of free ionised iron in the intestine and in its epithelial cells

The cells may actively prevent the outward diffusion of iron into the lumen but in any case passage in this direction is probably very small for two reasons Firstly the concentration of free iron in the plasma and hence probably in the intestinal cells is always very low and maintained so by the efficiency of the storage organs Secondly it may be assumed that there is always some iron in the intestinal canal because all the secretions which are poured into it probably contain iron and in the case of the bile this is certainly true[36 43] Hence the diffusion gradient from cells to lumen can never be a steep one Vice versa practically no iron will be absorbed if the intake is very low because the concentration of free iron—at any rate in the small intestine—will never rise much above that of the free iron in the cells Since moreover iron is a divalent or trivalent ion it is probable that it passes through the cells only with difficulty in either direction (compare SO_4[89] and magnesium and calcium) Thus, small differences of concentration may develop and even be maintained for a time without appreciable passage of ions

It follows from these considerations that the balances of intake and output that have been observed at physiological levels of intake are brought about by the absence of any significant absorption or excretion With intakes large enough to be quite outside the physiological range positive balances would be expected and this has in fact been shown to be the case[14 21 36 99]

It is suggested therefore that iron is excreted in very small amounts both by the bowel and kidney The smallness of the excretion is due to the fact that the activity of the storage organs constantly maintains the plasma iron at a low level It is doubtful whether the intestine has any power of regulating iron excretion. Iron is not freely absorbed The amount absorbed depends upon the relative concentration of free ions in the lumen of the gut and in the cells and plasma At physiological levels of intake only a very small fraction of the ingested iron is absorbed

The new theory explains satisfactorily the observations which as has already been shown are difficult to reconcile with the current theories Thus one would not expect to get much increased excretion of iron after intravital hæmolysis or after the injection of inorganic iron.

Since under normal conditions the human body is now considered to excrete practically no iron the menstrual loss at once assumes a significance which was difficult to assign to it on the older theories Women tend to be genuinely short of iron, and the shortage is accentuated by their low iron intakes They are living therefore at a lower plane of iron metabolism than men. Additional iron by mouth raises the absorption from their intestines and their hæmoglobins reach a higher level The theory similarly explains the hypochromic anæmias of multiparæ in whom the demands of pregnancy and parturition have more than replaced the menstrual loss One must always bear in mind however the possibility that the tendency to anæmia in women may be accentuated by other factors They may utilise the small amounts of iron which they do absorb rather differently from men[37 100]

Further the new theory accounts reasonably well for the positive balances observed on normal intakes after hæmorrhage[14] and the positive balances which must occur to produce the accumulations of iron which take place in polycythæmia and hæmochromatosis After a hæmorrhage or in polycythæmia the activity of the marrow so reduces the concentration of iron in the body cells and plasma that diffusion from the gut is sufficiently facilitated to allow appreciable absorption to take place In hæmochromatosis the iron deposited in the cells is insoluble and inert, and takes no part in the general equilibrium Hence there is a true deficiency of free iron, as evidenced first by the anæmia, and secondly by the cure of the anæmia by the administration of iron

The absorption of iron during childhood may be explained along similar lines The growing body and the active marrow maintain the concentration of free iron in the plasma and epithelial cells so low that absorption is appreciable with normal intakes. It remains to explain why absorption should become so much slower after the growth period It is suggested that this is brought about by the rise of free iron in the epithelial cells consequent upon the reduced demands for cell and hæmoglobin formation An increase of iron in epithelial organs at or about maturity has in fact been shown to take place by Zondek and Karp[117] so there is experimental support for this view

An important aspect of iron metabolism is the necessity for giving quite unphysiological doses of iron to cure certain anæmias common in clinical practice[84] Recent work[14 38a] suggests that after treatment has been in progress for a short time there must be abnormally large amounts of iron in the body It is tentatively suggested that these patients and those with polycythæmia rubra vera represent the opposite extremes of normality in marrow reactions to iron In polycythæmia the marrow is over active and hæmoglobin is too readily formed in the presence of normal or even subnormal amounts of free iron in the cells and plasma. How this could lead to the continuous absorption of iron has already been discussed In the refractory secondary anæmias, the marrow is sluggish and can only be goaded into activity by the presence of high concentrations of free iron, and owing to the activity of the storage organs these can only be maintained by the continuous ingestion of huge doses[14] It is to be noted that this theory does not suggest any reason for the activity or sluggishness[90] of the marrow

CONCLUSION

As already stated it is quite impossible to evolve a theory to cover the absorption and excretion of iron which does not conflict with some of the published findings The present theory is clearly open to criticism on many points and is likely to be so criticised It is put forward, however not with any suggestion of finality but because it seems to offer a better explanation of the experimental and clinical findings taken as a whole than any other and also because it indicates a number of points which clearly require investigation

SUMMARY

It is suggested from a study of the literature that the capacity of the bowel to excrete iron has been exaggerated, particularly its capacity to regulate the amount of iron which it excretes There are indeed indications that in man and certain animals the bowel excretes practically no iron If this is the case, the amount of iron in the body must be regulated by controlled absorption The possibility of this and some of the factors likely to be concerned are discussed

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LONDON HOSPITAL — It has been decided to remodel the Buxton and David Hughes wards at this hospital to provide isolation accommodation for children The house committee has reported that while there was satisfactory out patients' accommodation for children the in patient department had fallen behind the times The school of massage and medical electricity has been incorporated in the department of physical medicine

EXTENSIONS AT GOOLE HOSPITAL.—Extensions and alterations to this hospital have been made for the sum of £11,000 and have been opened by Mrs Craggs A new operating theatre has been provided, the men's wards have been improved, and two new wards added

NEW HOSPITAL FOR ST AUSTELL —It is proposed to build a new hospital in the field adjoining the old hospital which will then be used to accommodate the staff The building is to be of two storeys, and V shaped to form a suntrap The hospital is in the middle of the china clay industrial area and many accident cases are received.

INFECTIVE WARTS IN WORKERS USING BONE-GLUE

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In September 1936 an outbreak of warts was reported from a cardboard box factory On investigation nine girls were found to have warts mainly on the dorsal aspect of the hands and fingers especially on the skin just proximal to the knuckles (see Figure) All nine girls during their work came into contact with bone glue Two other girls who also worked with glue had no warts The remaining ten girls employed in the factory did not handle glue because they worked only on cardboard stamping machines and none of them had ever suffered from warts. All the workers used the same wash basins soap and roller towels. The juxtaposition of these two groups of workers—all of whom handled cardboard and used the same washing accommodation—with the presence of warts only in the workers who came into contact with glue suggested that the source of the infection or irritation was to be found in the glue On further inquiry it was learnt that warts on the hands of a worker were first noticed about three years previously and nearly all the affected girls gave a history of having had recurrent warts for at least two years. They had made individual and varying efforts to have the warts removed, some by going to hospital for treatment some by the application of strong nitric acid and some by taking large doses of Epsom salts which is believed to be a specific cure for warts by removal of the excess lime in the body In nearly all cases, however fresh warts appeared on the hands and fingers

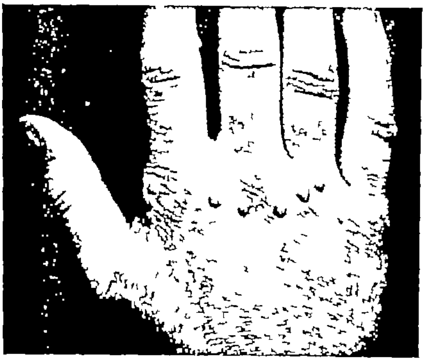
Typical cases were sent to Dr Rupert Hallam, dermatologist to the Royal Hospital Sheffield, and he was of the opinion that the warts were of the infective variety Preliminary investigations had been made in order to determine whether the warts were caused by a chemical irritant For instance in this factory the glue gave a strongly acid reaction to litmus paper whereas in another cardboard box factory where the only case of warts seen was in an office-worker the types of glue used gave either alkaline or neutral reactions The clinical diagnosis however that the warts were infective in type made it desirable to try to trace by the method described below the source and mode of infection.

AN INVESTIGATION

Two groups of volunteers (four in each group) were treated with the glue One group was treated with glue obtained from the glue-pots used by the girls at their work and the other group with glue which was of the same variety (obtained from the factory stock) but was made up in the laboratory and had not been handled by any of the workers The glue in each case was applied once a week to the back of the left hand where it was well rubbed in and left in situ for three or four hours. In addition a small piece of white lint about an inch square was soaked in the glue applied with the aid of sticking plaster to the outer surface of the left arm just above the elbow, and allowed to stay there for twenty four hours

The experimental treatment was begun in the middle of January, 1937 and because no warts had appeared by the end of March, the application of glue to the back of the hand was from then onwards carried out daily (Sundays excepted) Weekly applications to the upper arm were made as before.

The four persons treated with glue that had been made up in the laboratory showed no lesions but of those treated with glue from the factory glue-pots three out of four developed warts on the dorsal aspect of the left hand The first wart appeared at the beginning of May 3½ months after the experiment had been begun No warts developed on the upper arm in any of the eight cases. Dr Hallam diagnosed the experimentally produced warts as being of the infective type From these findings it was deduced that the wart-producing virus was merely carried by the glue in the factory glue pots, and that it was not present in the stock of glue pearls or powder



Characteristic distribution of the warts

A series of temperature readings showed that when the glue pots were on the water jacketed heater the temperature of the glue varied between 80 C and 90 C—i.e well above the lethal temperature for the wart virus When a glue pot was taken to the work bench it remained there until the temperature had fallen to between 35° C and 40 C More than one worker used the same glue pot, and it was noticed that the fingers and knuckle regions of the hands were constantly covered with glue During their work they were frequently obliged to lift piles of cardboard boxes from the bench and in so doing tended to abrade the skin over the knuckles The girl who showed the greatest number of warts was the one whose duty it was to clean out the glue-pots at the end of the day's work when the glue in the pots was usually at a low temperature It is to be expected that she would run a greater risk of infection because her hands were exposed to glue from all the pots in the factory and because the skin of her hands was exposed to a certain amount of friction during the cleaning process

Once the fact was established that the glue pots had been infected with wart virus and were being reinfected by girls who had warts on their hands, it was comparatively easy to clear up the trouble in the factory All girls suffering from warts were taken away from work involving contact with glue and sent to hospital for treatment They were not allowed to handle glue until the warts had entirely disappeared. No fresh or recurrent cases have arisen since this procedure was adopted

CONCLUSION

From the above investigation we conclude that the glue became infected in the pots while they were on the working benches, because here it was at a temperature below the lethal point for the wart virus The original infection had probably been introduced by a worker who had had her hands infected outside the factory The factors which appear to have had an influence on the infection are (1) the adhesive nature of the glue, which made for close and persistent contact of the virus with the skin, and (2) friction of the skin of the backs of the hands during work, which probably produced small abrasions rendering the skin more susceptible to infection, and determined the localisation of the warts

We are greatly indebted to Dr Hallam who gave us the benefit of his expert knowledge We also wish to thank those members of the laboratory staff who allowed us to experiment on them with the glue

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FOOD AND FLUID IN TYPHOID FEVER*

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HON PHYSICIAN TO THE ROYAL VICTORIA AND WEST HANTS HOSPITAL BOURNEMOUTH

Towards the end of the second or at the beginning of the third week of typhoid fever, one may be faced with *collapse* due, not to hæmorrhage, but to depletion of the circulation of necessary fluids Of this, there are two causes, namely (1) neuro circulatory depression with lowered blood pressures brought about by toxic poisoning of bulbar centres and myocardium , (2) difficulty in getting the patient to swallow a sufficiency of fluids *Such collapse is easily mistaken* for perforation, and needless laparotomy may be performed , it therefore deserves recognition as a complication to be anticipated

The signs of collapse are sudden sharp fall of temperature , sudden fall in blood pressures , anxiety, cyanosis of the skin , weak, running pulse , rapid breathing , rigor , but as a rule, no restlessness In the status typhosus, in which the intensity of the abdominal pain is much lessened by the extreme toxæmia and exhaustion of the patient, *great care* has to be exercised in discriminating between collapse and perforation Two important differentiating signs are persistence of "abdominal breathing" in collapse, its loss in perforation , and the greater intensity and localisation of the pain in perforation, with local rigidity and immobility of the abdominal wall

Collapse may persist for three or four hours, even longer , if treated forthwith, the condition is not dangerous If doubt remains, is laparotomy justifiable ? I think it is

FOOD AND WATER

In the treatment of typhoid, modern opinion is now mostly on the side of giving a more sustaining diet than the diluted three pints of milk in the twenty four hours—admittedly meagre fare for anyone suffering for several weeks from typhoid fever In addition to the diluted milk feedings, non residue, easily assimilable, strained foods are now deemed necessary, not forgetting the accessory food factors with a sufficiency of water, and of salt (The real value of salt as an accessory article of diet in typhoid fever has, in the past, been overlooked) The question arises should this fuller diet be given before the separation of the sloughs, or during the whole course of the illness ? Feeding is none too easy during the first two weeks , later, more difficult still if *tongue* and *mouth* are not properly cared for The cleansing of these and of the blocked nostrils is a ceremony which should be performed at regular intervals, using tooth paste, peroxide of hydrogen spray, and boracic vaseline flavoured with peppermint, in that order, the last being applied by means of a soft badger hair tooth brush Aqueous and glycerin solutions, as commonly used for the purpose, are quite unsuitable

It has been suggested that the cleansing of the tongue does away with what is a useful diagnostic sign of typhoid, even a valuable index of the condition of the patient , but this is an argument which carries little conviction nowadays

James Alexander Lindsay of the Queen's University of Belfast used to teach that the "typhoid state" was sometimes due to lack of sufficient nourishment This can readily be believed , but I submit that the condition is actually and in fact chiefly due to starvation of fluids It is not possible to arrive at any true estimate of the line dividing normal hydration from dehydration So far, no useful clinical means exist for the measurement of the fluid balance in the tissues, or in the body generally, except by the crude method of measuring intake and output So far as output is concerned, this can be done only approximately That loss of pressure and of volume in the circulating fluids occurs in typhoid is well known The scanty, concentrated urine during the whole febrile period, with reduced output of chlorides, offers evidence of a generalised dehydration of tissues , perhaps, *too*, of a natural effort at retention of fluids more or less thwarted by the difficulty in feeding sufficient liquid to the apathetic patient In a high proportion of all typhoid patients, diarrhœa, even alone, may speedily and seriously deplete the circulation

THERAPEUTIC HYDRATION

From the beginning of the illness, it is surprising how many patients evince no great thirst , how the nurse has to force drinks upon them Later, the sore tongue, dry mouth, and blocked nostrils may make the act of drinking and swallowing not only painful but almost impossible , so that the patient quickly shows the *effects* of lack of fluid, such as pyrexia, dehydrated skin, dry tongue, and parched mouth , scanty, concentrated urine with diminished salt content , low pressure pulse , low blood-pressure readings , even a shrivelled, wasted appearance It is my opinion that the fluid balance is as important to maintain as the diet This can be done by feeding more fluid, by salting drinks (thereby also encouraging thirst), and very simply and readily by slow rectal continuous drip (proctoclysis) by which means surprising quantities of fluid can be administered in the attempt to restore blood volume, to augment salt content, and to irrigate the tissues so as to wash out toxins as well as to counter their further absorption It is a method which need not be confined to the few, but can be utilised generally in a ward, even for those in the typhoid state who are incontinent—their very inertness makes the administration easy If proctoclysis fails then physiological salt solution can be given subcutaneously or by intravenous slow drip

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* Based on a contribution to the discussion on enteric fever held by the section of hygiene and public health of the British Medical Association at Belfast July 1937

To maintain an effective hydration sodium chloride must be balanced or increased having the additional advantage of obviating to some extent what appears to be a temporary toxic suprarenal failure with its sequel in lowered blood pressures prostration and general weakness Such a condition is now known to arise from insufficiency of chloride in the tissues

If the sodium chloride content of the blood-serum be allowed to drop below a normal level so as a consequence must its overflow into the urine this reduction in the excretion of chloride being a useful clinical sign of salt insufficiency Furthermore, a low salt content of the blood argues a high blood urea—a combination threatening harmful possibilities In practice, excess of salt with œdema is oftener recognised and treated than is its default with dehydration

Rectal saline given by the slow continuous-drip method I have not seen bring about pulmonary œdema although the eyelids and skin tissues generally may become puffy without apparent harm ensuing indeed, I have repeatedly seen good follow its administration It should be delivered slowly so as not—by over filling as it were—to embarrass heart and vessels already toxic or to excite bleeding from the bowel. Probably by the drip method no more than is required by the body is absorbed If œdema or undue puffiness develop salt intake can be limited and hypertonic saline can be given by intravenous drip so as to reduce hydration by promoting diuresis. Still, the use neither of saline nor of glucose need be overdone nor the body overtaxed by chloride excess It is surprising how the filling up of the circulation so as to maintain hydration cleanses tongue and mouth and adds to the comfort and well being of the patient, at the same time making the act of feeding less irksome for him as well as less difficult for the nurse One point to be noted is this that whereas the hydrated patient in typhoid fever whether taking plenty of liquids or having them administered as suggested is often restless the dehydrated patient shows no restlessness

The Brand cold bath method of treatment if made much use of abroad, has never found favour in the British Isles It is interesting that the types of patient said to derive benefit from the bath treatment are precisely those benefiting by therapeutic hydration—i.e those with dirty tongue and dry mouth those with extreme pyrexia those in the status typhosus those suffering from severe and from relapsing and prolonged, forms of the disease

In the immediate treatment of collapse and circulatory failure nothing seems to me to be more effective than full doses of the injectio adrenalini co or of strychnine or Coramine repeated at short intervals as believed to be necessary For constipation: in children a good petroleum emulsion is best in adults, an olive oil-soap-and water emulsion enema, freshly prepared, is in every way better than the irritative simple enema For diarrhœa better than any drug is colonic lavage with warm normal saline or plain water and a suitably adjusted diet.

The mode of death most common in typhoid fever is usually believed to be from heart failure by which is meant that the myocardium ‘ peters out from poisoning but the more I see of typhoid death, the more I believe that this results rather from neurocirculatory failure due to toxæmia and to poisoning of the bulbar centres, similar in many respects to that which so commonly causes death in acute pneumonia

Clinical and Laboratory Notes

A CASE OF SEVERE TOXIC JAUNDICE IN LATE PREGNANCY WITH RECOVERY

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According to Weiss (1935) catarrhal jaundice is an infectious disease and acute yellow atrophy of the liver is an aggravated form of it Cases of severe jaundice with toxic symptoms in pregnancy are rare and usually fatal and therefore such a case with recovery appears worth recording In the following case the history and clinical signs show such undoubted evidence of severe damage to the liver cells as to put it into the category of acute necrosis

HISTORY OF CASE

A married woman, aged 40 was admitted to the Radcliffe Infirmary as an emergency on the night of Jan. 16th 1937 She had three children the youngest 2½ years old all had been normal pregnancies and labours and she had had no past illness of any significance The present pregnancy was 37 weeks advanced and the patient had been well until two weeks before At this time several members of the family had influenza and the patient herself became ill and started vomiting She had however no sore throat limb pains headache or pyrexia all features of the epidemic of influenza at the time Four days before admission she was vomiting large amounts of often typically coffee-ground material, and three days before admission there was blood in the result of an enema She gradually became drowsy and jaundice was noticed on the day of admission. There had been no fœtal movements for three days

On admission there was one large coffee-ground vomit Examination showed the patient to be semi-comatose and restless She could be roused to give answers to questions but resented this and the answers appeared quite undependable. The pulse was soft and the rate 120 Temperature 98·0 F and blood pressure 110/90 mm Hg Jaundice was very deep when seen in good artificial light Tongue glazed and dry The uterus was 4 fingers-breadth above the umbilicus but no fœtal heart could be heard nor movements felt. The size of the liver was difficult to determine before delivery and the area of dullness appeared normal It was tender on palpation The heart and lungs showed no abnormality The urine was reduced in amount and contained bile pigments albumin acetone pus, granular casts and *Bacillus coli*

Treatment—The membranes were ruptured at once under gas-and-oxygen anæsthesia and greenish liquor escaped, and immediately afterwards 3 pints of 10 per cent glucose saline were given intravenously with 10 units of insulin. 10 c.cm of 10 per cent calcium gluconate were given intramuscularly The calcium was continued daily for four days

Progress—The patient was restless all night and retched but no actual vomiting occurred She was delivered at 11 A.M next morning of a recently dead fœtus after an easy labour She was still drowsy but more on the spot and intelligent in answering questions. She was taking fluids in sips by mouth. Bowels opened with an enema stools normal in colour The liver was more easily palpable and found to be enlarged about three fingers-breadth below costal margin Three days later the jaundice was unaltered but there had been no further vomiting and she was perfectly normal mentally The van den Bergh reaction was positive delayed direct, and the icteric index 37 A blood count showed:—

Red cells	5 000,000	Differential:	
Hæmoglobin	70%	Polymorphs	66
Colour-index	0 7	Lymphocytes	21 %
Leucocytes	8900	Mononuclears	13 %

By the end of a week the patient was definitely but began to run a slight temperature.

considered to be due either to the urinary infection, or to inflammation at the sites of injection of calcium gluconate Jaundice disappeared between two and three weeks after its onset, and the patient was discharged one *month after* admission perfectly well When seen again five months later she had been in excellent health all the time, and the following investigations on July 13th showed that recovery has been complete Van den Bergh reaction (direct and indirect) negative Icterus index 11 units (normal under 8) Takata-ara reaction negative Lævulose tolerance test no impairment of hepatic function as demonstrated by ability to utilise lævulose Wassermann and Meinicke reactions both negative Radiography gall bladder normal

DISCUSSION

Toxic jaundice occurs at its worst in pregnant women, and, according to Rolleston and McNee (1929), when the disease is fully declared the prognosis is very gloomy, and "in fact some doubt of the diagnosis *will always arise in those cases that recover* completely" In the case recorded the possibility of the jaundice being of *obstructive* or *hæmolytic* origin was naturally considered, but the suddenness of the onset and the severity of the symptoms, and the lack of a sufficient degree of anæmia to account for such severe jaundice excludes this The van den Bergh reaction, positive delayed direct, is also in favour of a toxic cause

Typically, the disease begins in two stages, the first lasting five to six days with gastro intestinal disturbance and malaise, and the second characterised by the typhoid state and nervous symptoms, with severe jaundice and vomiting The vomiting is persistent and may contain altered blood, and the fæces are dark The pulse is rapid and feeble and of low tension At the onset of grave symptoms the liver may or may not be enlarged and tender The urine is of high colour, and contains bile, albumin, and casts

About half the number of recorded cases in women have happened halfway through or towards the end of pregnancy The condition is also known to follow certain infections, such as typhoid fever, pneumonia, influenza, and syphilis In this patient influenza may have been a precipitating cause An infection of the urine was also present, but this was not heavy As far as is known the toxic agents chloroform, arsphenamine, and phosphorus can be entirely ruled out as contributing causes, and there appeared to be no likelihood of Weil's infection, as the patient had recently removed to a new house free from rats and near no water

The experiments of Whipple and Sperry show that repeated administration of chloroform to dogs is followed by hyaline necrosis of the central 3/5ths of each hepatic lobule The extent of this has been determined by the removal of a piece of liver tissue on the day following the last anæsthesia The animal recovers completely, and examinations of the liver made at the end of one, two, and three weeks have shown that repair is almost complete *after* two weeks, whereas at the end of three weeks the liver has returned to normal.

A combination of bacteria and a poison produce a lesion closely resembling acute yellow atrophy in man Neither poison nor bacteria alone can cause exactly these changes (Opie 1910), and bacteria such as *B coli* which have little pathogenicity for the normal animal are virulent for the animal whose liver has been injured by chloroform or phosphorus

The existence of pregnancy is known to throw a considerable strain on the liver, which would make it more vulnerable to infections of any kind, whether general such as pneumonia, or local such as an ascending infection from the duodenum In the case under discussion the fœtus had probably been dead three days, and was expelled within 36 hours of the onset of jaundice The dehydration was made good, and calcium was supplied by intramuscular injection Birch (1937) has recently published a case of severe toxic jaundice occurring in a man extremely ill with pneumonia Large and frequently repeated injections of glucose saline and insulin and calcium gluconate were given until the patient had had 4790 c cm of 30 per cent glucose, 980 units of insulin, and 20 c cm of calcium gluconate solution in 10 days, and eventually recovered The suggestion is that if cases of toxic jaundice are supplied with adequate amounts of these substances over a long enough time, recovery may follow in a case which would otherwise be fatal

I wish to thank Dr W D Sturrock, *obstetric physician* to the Radcliffe Maternity Hospital, for permission to record this case, and the staff of the pathological laboratory for the investigations involved

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ARSENICAL INTOLERANCE AND THE TREATMENT OF TRICHOMONAS VAGINALIS INFECTION

By C G H Campbell, M D Camb, D P H
ASSISTANT MEDICAL OFFICER L C C (WHITECHAPEL) CLINIC, LONDON

An increase of interest in vaginal infection with *Trichomonas vaginalis* has drawn attention to the value of the pentavalent arsenical compound acetphen arsine, or "190," in the treatment of this condition Since drugs of this type are now being very freely used, and can be obtained under various proprietary designations from any qualified chemist without a doctor's prescription, it has been thought that the following experience may be of interest and may possibly throw some light upon certain toxic eruptions of which the cause has not been found

A. B , aged 38, commenced treatment for sero positive primary syphilis in September, 1926 After four injections of Neokharsivan (3 grammes in all) at weekly intervals, a widespread, irritating erythema appeared, which progressed in two weeks to a generalised exfoliative dermatitis Four days after the first appearance of the rash the patient developed jaundice with enlargement of the liver These conditions gradually improved under treatment with sodium thiosulphate, and by the end of January, 1927, the patient was free from jaundice and was discharged from hospital After a long interval, treatment for syphilis was resumed with *bismuth preparations*, and all blood tests have now been negative for several years

Recently this patient has been attending the London County Council (Whitechapel) Clinic on account of a vaginal discharge in which *Trichomonas vaginalis* has been identified For this infection Stovarsol was used as a local application two 4 grain tablets were inserted daily into the vagina After five days of this treatment the patient reported at the clinic with an itching, macular, erythematous rash on the face, neck, trunk, and limbs Stovarsol was discontinued and an injection of Ametox (sodium thiosulphate), 10 per cent solution, 10 c cm was given Two days later the eruption had extended and the condition of the patient demanded admission to hospital Nine days after admission there were large patches of fading erythema confluent over a great part of the trunk, back and front These areas were desquamating in coarse scales most marked on the extensor aspects of the forearms fingers legs and ankles On the face and neck the erythema had faded but there was a fine desquamation The skin of the palms of the hands was thickened

Arsenical preparations of the acetphenarsine group are not without toxic effects in hypersensitive patients, and these may be of an insidious type and give rise to difficulties of diagnosis so it may be of interest to note the possibility that they may be readily absorbed per vaginam and may in some cases provoke constitutional reactions

I have to thank Lieut -Colonel E T Burke director of the L C C (Whitechapel) Clinic for his permission to publish this case

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CYSTICERCOSIS AS A POSSIBLE CAUSE OF EPILEPSY IN AN INDIAN

By M Sambasiva Rao M B Madras
M R C P Edin D T M
ASSISTANT SURGEON M AND S.M RAILWAY HOSPITAL,
PERAMBUR, MADRAS

The first case of epilepsy in an Indian caused by *Cysticercus cellulosæ* was reported by Minchin (1937) and this is perhaps the second

A Hindu coolie aged 28 was admitted to hospital in May 1937 having had sudden jerking movements of the left forearm three days previously lasting for about a minute with headache for some hours subsequently There was no aura or loss of consciousness no history of similar fits before and no relevant family history

He had two similar fits in the ward each consisting of jerking movements limited to the left forearm and has not had a fit for two months since The rarity of idiopathic epilepsy commencing so late and the strictly localised nature of the fits suggested an organic cause

Blood for Kahn test was negative blood pressure was 120/80 mm Hg and there was an eosinophilia of 5 per cent Stools showed no ova and the urine was normal There was no ocular paralysis and the fundi were normal Grip gait jerks sensations &c were normal He was accustomed to eating pork but denied having ever suffered from tapeworm

A thorough search was made over the whole body and a cyst was found embedded in the right deltoid He said that he had had the nodule for 20 years It was dissected out and a typical uncalcified cyst of the size of a large pea with the milk spot was removed It was split open and showed under the low power a scolex with four suckers and a double row of hooklets

Skiagrams were taken from head to foot but did not reveal any calcified cysts although a nodule was just palpable on the right trapezius

Points of interest in this case are First the long time the cysts remained without calcification; that in the right arm was 20 years old Secondly the lack of history of intestinal tæniasis indicating an external infection. Another patient seen in Edinburgh an ex-soldier from India, also denied having ever suffered from tapeworm The majority of MacArthur's (1934) cases are similar It is too soon to say whether this seeming antagonism between the bladder worm and the adult stages of *Tænia solium* is of any significance

My thanks are due to Dr J Fryer district medical officer for allowing me to investigate this case and to Dr R J Dyson chief medical officer for permission to publish the report

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BRITISH MEDICAL ASSOCIATION

SECTIONS OF MEDICINE AND SURGERY

Prof W W D Thomson (Belfast) presided at a joint meeting of these sections when Dr L S T Burrell (*London*) opened a discussion on

Abscess of the Lung

He confined his remarks to the single abscess such as occurs for no apparent reason or as a result of pneumonia ruptured empyema embolism or aspiration. In a series of 199 cases of this type 43 resulted from pneumonia 32 were associated with bronchial carcinoma, 23 with septic foci in some distant part of the body and 2 followed tonsillectomy The first symptoms said Dr Burrell are malaise a nasty taste in the mouth and offensive breath and sputum hæmoptysis may occur The temperature is usually raised and may be hectic in character Clubbing of the fingers appears early The sputum may contain elastic fibres and pyogenic organisms Clinical signs may be absent unless the abscess is superficial when there *may be* an associated pleurisy Radiography is essential using antero posterior oblique and lateral films Stereoscopic films are apt to be misleading The prognosis is serious death may occur from extension into lung tissue toxæmia hæmoptysis, or embolic spread to some distant part usually the brain

Dr Burrell held that medical treatment should be given a good trial—lasting at least six weeks—before operation was decided on Postural drainage used in the proper manner might suffice to bring about recovery Artificial pneumothorax had fallen into disrepute owing to the possibility of rupture into the pleural cavity If there were no pleural adhesions it was a safe method. Aspiration through a bronchoscope was worth trying though it should not be continued unless there was improvement. Surgical treatment consisted in opening the abscess and draining it The operation should be performed in two stages the first to produce adhesions between the chest wall and the pleura over the cavity and the second to drain the abscess The procedure was associated with definite dangers such as hæmorrhage and cerebral abscess and should therefore not be treated lightly Injections of alcohol serum and sodium benzoate had been recommended as also had an intensive course of arsphenamine in gangrenous cases on the assumption that this condition was of spirochætal origin Pre-operative dental treatment was of value in reducing pulmonary complications

Mr J E H Roberts (London) spoke of the importance of the early diagnosis of the condition and of its localisation by X rays and lipiodol. These abscesses were generally close to the surface of the lung though that did not mean they were necessarily close to the chest wall and they might lie close to a fissure the diaphragm, or the mediastinum In the early stages they had no attachment to bronchi later there was erosion into bronchi with partial drainage shown by the fluid level. Surrounding the abscess there was fibrosis and endarteritis As to treatment, postural drainage was *sometimes* successful, but it must be intelligently used the abscess being first localised and the best position determined for its drainage Bronchoscopic suction might be effective but should not be used as a routine or without postural drainage Pneumothorax, drugs and short-wave diathermy were not only useless but pneumothorax was dangerous. Of other operative measures drainage could be carried out either in one or two stages according to the condition of the pleura If the pleura was adherent or white and if the periosteum of the resected rib was thick it was probably safe to perform the operation in one stage, but in doubtful cases two stages were safer The abscess could be located with a needle through the wound, and when it had been found the needle should be left in position as a guide to the incision in the lung The abscess should be cleared out, the roof removed by diathermy, and the cavity packed The first dressing should be carried out in the theatre and the cavity inspected to make sure that no pockets of pus escaped notice at the operation Cyclopropane could be used as the anæsthetic unless diathermy was contemplated A radiogram should be taken after operation to ascertain that drainage is adequate and to exclude the formation of new abscesses In early cases conservative treatment should be tried for six weeks if the patient was not too ill, otherwise operation should not be delayed If the patient's condition was not very grave lobectomy should be tried—also in cases of persistent discharge after the attempted drainage

Dr PETER KERLEY (London) emphasised the fact that areas of collapse in regions remote from the abscess might confuse diagnosis An inhalation abscess might develop on the opposite side and radiograms should therefore be taken often—i.e , once every three days The tomograph was useful in diagnosis and localisation It was occasionally difficult to distinguish an abscess from a carcinoma which should be suspected in the absence of pneumonitis on one wall and when enlarged mediastinal glands and phrenic paralysis were evident The amount of surrounding pneumonitis was a valuable guide to prognosis

Dr CARL SEMB (Oslo) agreed with much that Mr Roberts had said Operation in his view should not be delayed too long

Dr GEOFFREY MARSHALL (London) said that lung abscess was more common, and better results were obtained from its treatment than statistics seemed to show , a number of patients living in the country must recover spontaneously without being diagnosed Morphia by dulling the cough reflex might be a factor in the onset of a lung abscess Two patients who coughed up their abscesses during transport had prompted him to try the method of percussion with postural drainage, which had been beneficial in some cases Bronchoscopy should be performed once at least on the chance that it might prove useful A leucocyte count was often of prognostic value

Dr W BURTON WOOD (London) preferred natural drainage by the postural method combined with bronchoscopic suction if necessary He showed radiograms of several patients treated by this method with a good end result, and one of a patient who did badly after operation

Prof E W ARCHIBALD (Montreal) said that the bacteriological findings as well as the amount of surrounding pneumonitis were of use in estimating prognosis

Mr G R B PURCE (Belfast) said that lung abscess probably arises both from aspiration of infected material and from emboli He drew attention to the cultivation of streptococci from the blood by Okell and Elliott in 30 out of 40 patients five minutes after the extraction of septic teeth The bacteriology of lung abscess, he added, was confusing In the putrid type of abscess an anaerobic streptococcus was associated with *B fusiformis* and a spirillum In America *Bacterium melaninogenicum* had been incriminated None of the cases treated surgically in his series of 66 had developed cerebral abscess Bronchoscopy sometimes enabled bronchial neoplasm to be excluded Radiograms were essential and lipiodol was sometimes useful. Bronchoscopic suction had not in his experience made much difference If most of the abscesses were peripheral, it was difficult to understand how any but very big ones communicating with a large bronchus could even be reached The abscess appeared to be growing and to be surrounded by more pulmonary infiltration accompanied possibly by signs of widespread pleural involvement and a septic type of temperature Operation was imperative and should be done without delay even within the first six weeks of the illness After operation it might sometimes be necessary to maintain a permanent fistula In the series studied 26 had conservative medical treatment with a mortality of under a third, and 26 had an operation after medical treatment had failed to improve them , a third of these had died

In reply, Mr ROBERTS said the mortality rate of lung abscess was very high Since conservative medical treatment led to cure in only 30–35 per cent of all cases he believed that patients not progressing favourably under conservative treatment should have an operation within the first six weeks at least and possibly still earlier

SECTION OF HYGIENE AND PUBLIC HEALTH

Prof W J WILSON presided at a meeting of this section when Dr JOHN RITCHIE (Dumfries) opened a discussion on

Enteric Fever

from the standpoint of one concerned with the health of a rural area His theme was the application of established principles to the prevention of enteric under the changed conditions of modern life He said that although enteric had become a clinical curiosity, formidable epidemics still arose These epidemics might be water or milk borne, or they might arise concurrently from both sources The carrier state threw light on many otherwise inexplicable outbreaks Improved sanitary administration had reduced the danger of massive food infection, while the hospitalisation of enteric cases reduced the risk of direct spread, even in parishes in which there had been no appreciable improvement in sanitation If the disease was to be kept in check in rural areas persistent effort must be directed towards the protection of water and food (especially milk) from the specific infection

The water-borne epidemic was usually the result of a massive infection This explained the clinical incidence of enteritis in the community before the appearance of enteric fever Cases of paratyphoid associated with typhoid usually pointed to gross contamination The milk borne epidemic, on the contrary, was usually due to a small pollution operating in a good culture medium The control of the water supply in order to obviate any risk of an epidemic was a matter of finance In small rural areas the problem was difficult to solve , the sanitary staff available was inadequate both in numbers and in training In many parts of the country there still existed sources of water-supply and sewage systems which had not been kept up to date , these presented a real danger In rural areas also, in spite of repeated warnings, the auxiliary water-supply was often used for drinking purposes The control of the water-supply should be made a regional rather than a local responsibility Milk borne epidemics might be due to polluted water used in washing the utensils, or might be started by a single victim of a water borne infection The elimination of the carrier as well as the active case led to many practical problems for the recognition of the carrier was sometimes difficult Dr Ritchie held that the authorities should have power to remove proved carriers from food trades In his view enteric fever should be treated in hospital wherever possible and every outbreak should be studied continuously by an expert bacteriologist

Dr S. WATSON SMITH (Bournemouth) followed with a paper based for the most part upon his experience during last year's outbreak of typhoid fever in Dorset and Hants He first described the early symptoms and differential diagnosis of the disease noting the value of a slow pulse and enlargement of the right lobe of the liver (especially in children) as early signs About the end of the second week signs of collapse were apt to appear these might be wrongly attributed to hæmorrhage or to perforation Collapse might persist for 3–4 hours and if promptly treated was not dangerous If the interpretation of the symptoms was in doubt laparotomy was justifiable As regards treatment, great stress should be laid upon proper feeding The need to maintain fluid balance called for therapeutic hydration from the outset of the illness (see p 686) The avoidance of salt depletion was also important Both fluid and salt could be supplied by salting drinks or by slow rectal feeding Dr Watson Smith's results with sera were equivocal

Lieut -Col C H H HAROLD (London) discussed the epidemiology of water borne typhoid fever He emphasised the need for constant watchfulness giving historic and modern examples to support his point He showed how recent years had witnessed a change in the incidence of typhoid from large cities to small communities He observed that rapidly growing areas were danger zones that paratyphoid epidemics could seldom be traced to water and that fly borne epidemics might resemble water borne ones The early part of the Bournemouth epidemic resembled a water borne infection Discussing bacteriological control Lieut Col Harold emphasised the value of Wilson and Blair's medium in the examination of raw waters and effluents The chances of successful isolation were greater when the use of an inhibitive medium was followed by direct plating

Dr GEORGE CHESNEY (Poole) also paid a tribute to the value of Wilson's medium He discussed the epidemiology of the Bournemouth epidemic. The source appeared to have been a carrier who caused the infection of a stream. It was far from clear how the milk became infected The cows might have been the connecting link between the stream and the farm in one or more of three ways (1) external infection of the teats by the water of the flooded stream might have infected the milk (2) a particular cow which died early in August might have been the source (3) the cows might have acted as carriers of the organisms These hypotheses opened up a number of lines for further research

Dr C J MCSWEENEY (Dublin) submitted some remarks on serum treatment in which he brought up to date a previous communication[1] by the addition of more recent material The use of the serum was confined to severe cases In two thirds of the cases the effects were classified either as excellent or definitely good. He hoped that it would be possible to produce a more concentrated serum

Dr S H COOKSON (Bournemouth) also reported favourable results from the use of the serum in serious cases Controlled experiments were unfortunately impracticable

Dr A GARDINER ROBB (Belfast) found it difficult to interpret the results which he had observed after the use of the serum in 120 typical cases

Mr A FELIX, D Sc outlined work on the antigenic structure of the typhoid bacillus and the significance of the various antigenic components in infection and immunity A special antigen called the Vi antigen had been demonstrated in the typhoid bacillus which was associated with its virulence its corresponding antibody was a powerful protective agent The O antigen though also essential for virulence, appeared to be chiefly responsible for the toxic symptoms, and the O antibody was an indicator of the content of endotoxin neutralising bodies in the serum Two conclusions of practical importance seemed therefore to be quite obvious (1) antityphoid vaccine must contain Vi antigen in its least damaged form and (2) therapeutic antityphoid serum must contain effective amounts of ' O and Vi antibodies Dr Felix demonstrated a table showing that all the commercial antityphoid sera which he had tested so far were entirely devoid of the ' Vi antibody and very poor in ' O antibody in the mouse-protection test these sera were of no protective value whatsoever He thought it quite possible that the sera prepared 30 years ago by Chantemesse and Macfadyen might have been of therapeutic value because they were prepared by methods which did not destroy the labile Vi antigen These methods however had been abandoned long ago and the commercial antityphoid sera produced according to the customary methods of immunisation with killed bacilli or extracts did not contain any Vi antibody Up to the present it had not been possible to dispense with the use of living bacilli in the immunisation of the horses Dr Felix gave a brief account of the results of the clinical trials conducted abroad with the new antityphoid serum prepared in the serum department of the Lister Institute at Elstree In 1934 in Palestine the therapeutic effects of the antityphoid serum were compared with those following the administration of normal horse serum In 1935 in Cairo a specially prepared pure O immune serum was compared with a serum containing both O " and Vi " antibodies The results clearly indicated that the most beneficial effects on both the toxæmic symptoms of the disease and the pyrexia were produced by the serum containing the two antibodies In connexion with the determination of the typhoid-carrier state he mentioned that according to the results so far obtained ' Vi agglutination seemed to be of real aid to an early diagnosis of chronic typhoid carriers whereas H' and O agglutinations were of little if any value

Dr R. J MAULE HORNE (Poole) recounted his clinical experiences during the Poole epidemic He also believed hospital treatment to be essential. The mortality experienced amongst cases treated in hospital in Poole was very low

Dr F MARY ERSKINE (Belfast) read a paper on the

Incidence of Goitre among School-children

Goitre was three times as common in inland areas as in coastal ones. It was more prevalent in the country than in towns. Two factors working together appeared to result in the production of goitre The first was infection (especially an infected water-supply resulting from defective sanitation), and the second an insufficient iodine intake These two factors could explain the regional distribution of the cases in Ulster Nutrition and diet were important

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[1] *Lancet* 1935 1 1095

Les méthodes chirurgicales du traitement de l'angine de la poitrine

By MARCEL BÉRARD Paris Masson et Cie 1937 Pp 384. Fr 60

THIS is a critical review of the various surgical operations tried during the last twenty years for the relief of anginal pain. In the clinics of Strasbourg, Boston and other American centres, Dr Bérard has had excellent opportunities to examine patients after operation, and though the technique of the several interventions is not described his account of the results obtained is absorbing Several important points emerge Sympathectomy definitely relieves pain in selected cases of angina pectoris, the period of relief in some cases being reckoned in years The operation is safe in skilled hands but, as might be expected, some patients die later of heart failure Paravertebral injection is also safe and will often control pain Total thyroidectomy is discussed in detail, apparently thyroid feeding is not always effective in controlling post-operative myxœdema Dr Bérard favours, on theoretical grounds, attempts to remedy the root cause of angina pectoris—cardiac ischæmia—by grafting, he reviews the first series of cases, operated on by C S Beck, with some emphasis on the high immediate mortality of the operation

This book should be studied not only by surgeons who, disregarding the warning issued by Sir James Mackenzie some years ago, are attempting the active relief of angina pectoris but by that larger body of conservative physicians who hold fast to Mackenzie's teaching in this respect

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Human Understanding and its World

A Study of Societies By K W MONSARRAT, Consulting Surgeon, Royal Northern Hospital, Liverpool University Press of Liverpool, London Hodder and Stoughton 1937 Pp 480 15s

ONE of the troubles about philosophy is that thought is always in advance of language and it necessarily follows that if a man has some very fresh thought to give the world he may have difficulty in finding adequate words for it Mr Monsarrat's book is the fruit of very wide reading and, we doubt not, of much reflection much of it is interesting to read and provocative of new ideas and points of view about subjects as diverse as Hosea and the electron We are quite doubtful whether we have grasped the central thesis round which the chapters are grouped It seems to be that we must think of everything in terms of doing rather than being, that function overwhelms form But that may be only part of the tale the author wants to tell

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Modern Treatment in General Practice

Vol III Edited by CECIL P G WAKELEY, D Sc, F R C S, F R S E, Senior Surgeon, King's College Hospital, Editor, *Medical Press and Circular* London *Medical Press and Circular* 1937 Pp 436 10*s* 6*d*

THE 51 articles of the third volume complete this series of reprints from the *Medical Press and Circular* With the advance of surgery and the increase in the complexity and exactness of medicine in an ever-increasing number of the more serious complaints, one function of the family doctor must be to make a diagnosis at the earliest possible moment and refer the patient to a suitable expert at a curable stage As H A T Fairbank says in this volume in his account of congenital dislocation of the hip, "it is essential, from the patient's point of view, that the general practitioner should be familiar with the clinical signs of the condition and should realise what can be achieved in the way of treatment by those who have the necessary training and experience" This has been the guiding principle throughout these articles, so that many deal as much with diagnostic methods as with treatment proper, and aim at describing enough of the details and results of operative procedures to enable the practitioner to assess their value and explain them intelligibly to his patients Some of the subjects dealt with, it is true, appear to lie outside the scope of general practice, for example, such highly specialised matters as the surgery of tumours of the pituitary gland and the treatment of œsophageal obstruction, and some methods of treatment are included which have not achieved general acceptance, such as the selenide treatment of advanced cancer But on the whole the three volumes provide convenient and up to-date summaries of the treatments which the general practitioner wants to know about

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Curieterapia in Dermatologia

By Prof VINCENZO PALUMBO, Director, Italian Radiotherapy Institute Belluno A Salvador 1937 Pp 87 L 30

Prof Palumbo begins his book with the usual section on physics He includes a table showing the absorption of soft and hard beta and gamma rays in media of varying densities, another giving the constant of the uranium radium series, and yet another extremely elaborate one setting out the dose in millicuries destroyed or in milligramme hours obtained over periods from one hour to 15 days from applicators containing from 0 66 to 300 milligrammes of radium element He describes the measurement of gamma ray dosage made by Mallet and Danne and notes the relationship of the D unit suggested by Murdoch and Stahel to the "r" unit In the section on biophysics nothing new emerges but it is a good summary of work which has been generally accepted The most interesting section is that on the treatment of skin diseases X radiation has been much used in Italy for inflammatory conditions, but the extension of radium therapy to large areas is a new idea Descriptions are given of alpha, beta, and gamma therapy Excellent results are claimed in the treatment of all forms of acne, alopecia areata, eczema, hypertrichosis, psoriasis, sycosis, and the tuberculides, and radium has also been used with success for temporary epilation in ringworm and favus The dose for the inflammatory conditions is that which has been found to produce temporary epilation but is sometimes stated in terms of epilation and sometimes in terms of skin erythema dose The other skin lesions whose treatment is described are those more usually treated by radium—squamous cancer, basal cell cancer angioma and keloids—and the illustrations show how effective treatment has been Unfortunately, although the author tells us in the section on physics that the dose must obey the physical rules and that to this end full details must be supplied, he omits to give full details of any of his treatments, with the result that one is left with little idea of how the cure of the varied and numerous skin diseases is obtained The reader must wonder what use is to be made of the physical tables if the physical dose is to be entirely disregarded when practical treatment comes to be considered

THE LANCET

LONDON SATURDAY SEPTEMBER 18 1937

THE HUMAN HEART

THE papers of BOURNE SCOTT and WITTKOWER concluded this week clarify the clinical view[1] that emotional state and personality go far to determine the nature and severity of the symptoms produced by ischæmic heart disease No clinician has ever doubted that the discrepancies often observed between the signs and symptoms of different patients must be related in part at least to their psychological make up Dr WITTKOWER's studies recorded on another page represent an attempt to probe this matter a little more deeply and to carry the description of people with disproportionately severe symptoms beyond the adjectives 'nervous and sensitive A logical approach to an estimate of the part played in any disease by psychological factors is the comparison in groups with and without the disease of the incidence of the psychological states suspected of influence Dr WITTKOWER and his colleagues pursuing this path have discovered a striking excess of long standing anxiety states in a group of patients with or without organic disease who complained of cardiac symptoms as compared with another group undoubtedly suffering from organic heart disease but without symptoms Dr WITTKOWER's investigations of what Dr BOURNE still prefers[2] to call angina innocens show clearly that this condition is really one of anxiety hysteria No better argument could be found for the opinion[3] that to qualify the word angina by calling it innocent or false is about as likely to carry conviction to this type of patient as clapping a halo on Mr WALLACE BEERY and calling him SHIRLEY TEMPLE is likely to carry conviction to a cinema audience On the other hand to name the condition anxiety hysteria is to expose the patient to that barrage of criticism and useless advice which is both the painful fate of many neurotics and a source of difficulty in treating them

But troubles of nomenclature are not the only ones surrounding the conditions known as left inframammary pain or neurocirculatory asthenia Dr DORIS BAKER[4] has shown that sighing respiration precordial tenderness, and palpitations form a syndrome which is organically benign and undoubtedly related to anxiety There is no reason why a few of these patients should not develop ischæmic disease of the heart—anxiety has indeed been held by some to predispose to this—but surely the intelligent course of action with them is not to fix a neurosis by mentioning this disability but to deal with the anxiety state that is the cause of the presenting symptoms ? For this purpose examination by a psychologist has at least two virtues To begin with it satisfies the need for proper diagnosis since in the absence of open or latent anxiety the presence of precordial pain still suggests the possibility of an organic lesion that may be dangerous and secondly even if treatment of the anxiety state is less than completely successful it may at least teach the patient to distinguish—as intelligent victims of neuroses generally do—between pain whose degree or type they know to be related to chronic emotional states and pain whose organic basis may demand the immediate attention of a physician Investigations such as these show clearly that the problem of how to integrate the newer psychological knowledge with general medicine is perhaps best solved in this generation at least by clinical collaboration between physician and psychiatrist There is no real unwillingness nowadays to coöperate but undoubtedly difficulties remain. Most doctors have tried to study and understand the modern psychological outlook few of them are satisfied with the result of their efforts In this unfortunate impasse there are various factors, outstanding among them being the jargons and the differences of the psychological schools Dr WITTKOWER has shown that it is unnecessary in an exposition designed for clinicians to use any but simple technical terms which he defines clearly we hope that the lesson will not be lost on his fellow psychologists

There are deeper difficulties in the integration of psychology, but they are not likely even to be faced much less overcome if physicians and psychiatrists meet only over patients with late and severe mental disorders In many aspects of general medicine psychological factors are of specific importance patients suffering from such diverse conditions as chorea diabetes, asthma colitis peptic ulcer hypertension hyperemesis gravidarum, and postural deformities have all been described at different times as ' nervous and immensely laborious studies have been made on the psychological side of the clinical puzzles which these disorders present Dr FLANDERS DUNBAR's compendious summary[5] of what has lately been written on psychosomatic problems published two years ago illustrates partly in its bulk and partly in the uneven quality of the work summarised both the interest aroused in clinicians of all countries and the unsatisfactory state of medical understanding Psychological work with patients is complex and time-consuming whether it is diagnostic or therapeutic at hospital or in private In consequence little psychological research in general medicine can be done unless it is specially subsidised Dr WITTKOWER's paper is the first fruit of the work on psychosomatic relations that has been endowed at the Tavistock Clinic by the Halley Stewart Trust and the Rockefeller Foundation It should draw the attention both of those who conduct and of those who endow research to a field from which a therapeutic harvest might be gathered with relative ease

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[1] Bramwell J C *Lancet* Sept 11th 1937 p 635

[2] Bourne G *Brit med J* 1937, 1, 695, 857 and 1138.

[3] See *Lancet*, 1930, 1 1309

[4] Baker D *Lancet* 1930 1 1280 1934 1 174 1936 2 787

[5] Dunbar H F., Emotion and Bodily Changes New York, 1935

FEVER THERAPY FOR GONORRHŒA

THE uses of fever induced by physical means are being explored with unabated enthusiasm in the United States. Up to date the best results have been obtained in gonorrhœa and its complications, and here at all events fever therapy has passed the experimental stage. There are various ways of bringing the patient to the required temperature, but it now seems to be agreed that the type of apparatus employed is less important than the experience of the doctors and nurses using it. From the beginning good results have been got with methods embodying very different principles and it has been felt that each school of thought could learn a good deal from the others. At the International Conference on Fever Therapy held in New York City last March the varieties of apparatus in common use were exhibited and some concern was expressed lest their commercial production might lead to unskilful handling on the one hand and unhelpful rivalry on the other. The two main groups are those that employ the principle of external heat (e.g., hot baths, electric blankets, radiant heat cabinets, and air-conditioned cabinets) and those that rely upon the penetrating qualities of high frequency waves or induced high-frequency currents. NEYMANN of Chicago, who is one of the pioneers of fever therapy, believes that "penetrating heat" is superior to external heat, since the latter produces an "unphysiological" state of affairs in which the temperature of the skin is higher than that of the viscera. He and HOLMQUEST[1] hold that electropyrexia gives "approximately normal conditions" in which "a biological tissue will function better." They say also that external heat causes abnormally high pulse-rate and quote two independent investigators in support of the statement that the pulse rate is relatively independent of visceral temperature, but bears a direct relationship to skin temperature. Further evidence is adduced to show that the capillary pulse volume is greater and the amount of perspiration less with external heat than with the penetrating heat. Most of these statements seem, however, to be based on theory and, although interesting, hardly warrant the conclusion that internal heating is safer and more comfortable than external heating. Moreover, though NEYMANN and HOLMQUEST employ electromagnetic induction to establish fever, they have borrowed the methods of the air-conditioning experts for maintaining the temperature. In this country we have little or no experience of these various techniques and must form our judgments from what is told of them. So many favourable accounts have been given of the air conditioned apparatus known as the Kettering hypertherm that we should hesitate to condemn it on the rather slender evidence that NEYMANN and HOLMQUEST offer.

PARSONS, BOWMAN, and PLUMMER,[2] for example, have found this hypertherm thoroughly satisfactory for the induction, maintenance, and control of fever. Their object was to decide whether fever is more, or less, effective than the ordinary remedies for gonorrhœa, and whether it requires a longer or shorter time for cure. Their patients were 87 young soldiers, all of whom were isolated, rested, and kept under strict control; 43 were treated with fever and 44 by the ordinary methods. Fever was induced for five hours at a time, at temperatures of 106.6°–107° F., every third day, and at least one treatment was given after the patient was apparently well. The decision as to cure was based on clinical grounds and on absence of gonococci and excess of leucocytes from smears of prostatic fluid for thirty days, during which isolation was enforced; this was followed by weekly observation under normal working conditions, all the reported "cures" being under observation at least five months. The patients were divided into three groups: (1) those with uncomplicated gonococcal urethritis, (2) those with acute infection of the prostate with or without other complications, and (3) those with chronic prostatitis. The dividing line between acute and chronic infections was arbitrarily fixed at ninety days from the onset of the disease. *In the first group* were 22 patients, 11 of whom received fever and 11 ordinary treatment. The time of treatment in the fever treated group averaged twenty seven days, as compared with eighty one days in those treated with irrigations. In each group 8 cures were obtained; but whereas 3 of the control patients had residual (presumably non-gonococcal) prostatitis after "cure" there were no such after-effects in the fever group. In the second group 28 patients with acute prostatitis and complications were treated, 14 with fever and 14 with irrigations. The fever group (12 cures) averaged twenty two days of treatment as compared with eighty four days in the control group (10 cures). In the series with chronic infections 18 were treated with fever and 19 with irrigations. The former averaged twenty eight days of treatment (16 cures) and the latter a hundred and five days (6 cures). The authors attribute the failures of fever therapy, with one exception, to errors of judgment and inadequate treatment; but it should be noted that the average age of these men was only 27 and PARSONS and his colleagues think few patients above the age of 40 would tolerate these high temperatures with safety.

In their treatment of gonorrhœa in the female BIERMAN and HOROWITZ[3] are more drastic. They quote an observation that various strains of gonococcus will survive at 106.7° F. for periods ranging from six to thirty hours, and since this is about as high a temperature as a patient can safely stand they supplement the fever with local heating of the pelvic organs. Their procedure—which they describe as "strenuous and not without danger"—is to raise the systemic temperature by means of short-wave currents while the patient lies in a lamp heated cabinet. At about 106° F. local diathermy is applied to the pelvis, with vaginal electrodes, and for an hour or two this is supplemented by pelvic short wave the object is to raise the vaginal temperature to about 109°-110° F while the general temperature is held between 105 5° and 106 5° A total of 121 women have been treated in the past six years with success in 113 (93 per cent) and no deaths or serious complications In the last 54 cases in which the systemic temperature was raised for about twelve hours at a time with about seven hours of additional pelvic heating the gonococcus disappeared after an average of 1 4 treatments BIERMAN and HOROWITZ think that the otherwise healthy adult—unless she is pregnant—can be treated in this way at any stage of a gonococcal infection even when there is acute salpingitis with fever and pelvic peritonitis Women with acute salpingitis at the time of treatment have sometimes shown normal tubal patency afterwards since some of the cases treated have been followed for five years the investigators are satisfied that the disappearance of gonococci is permanent and a number of their ex patients have had children In conclusion they say that the outlook for the woman with gonorrhoea has been brightened by the development of the combined heating procedure here described A rapid eradication of the gonococci can be achieved in most cases, and without danger of extension of the disease '

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[1] Neymann, C. A., Holmquest, H. J., *Med. Rec.* 1937, 145, 327.

[2] Parsons, E. H., Bowman, P. N., and Plummer, D. E., *J. Amer. med. Ass.* July 3rd, 1937, p. 18.

[3] Bierman, W., and Horowitz, E. A., *Amer. J. Obstet. Gynec.* July, 1937, p. 68.

THE CONTROL OF NOISE

NOISE has come to mean any sound that is undesired by the hearer and its undesirability depends upon such factors as its intensity quality and pitch the background against which it is heard and its environment as well as upon the hearer s taste and state of mind his health and his occupation at the moment Estimation of the absolute noisiness of a given sound is therefore clearly impossible and the most that can be done is to measure its loudness in relation to its background as heard by a normal ear While agreeing that the composition of the *sound has to be* considered Mr G W C KAYE D Sc has come to the conclusion that sheer loudness is the determining factor in most cases of annoyance caused by noise This opinion expressed in a presidential address to a section of the British Association early this month, may not be acceptable to psychologists for they are apt to lay more emphasis on *individual* abnormal reactions than on stimuli But there can be no question that a large proportion of people are more likely to be annoyed by big noises than by small ones and where measurement is required the problem *as* he says largely *resolves itself into* the correlation of the sensation of noisiness (as assessed by the ear) with the associated energy which *can* be quantitatively measured by physical instruments[1]

The human ear is sensitive to a range of *oscillatory* pressures from 0 001 dyne per square centimetre below which no sound is heard to 1000 dynes above which pain is felt in the ear In order to cover this vast range a logarithmic scale of intensity is used the unit being one 'decibel which represents a definite fractional step 26 per cent, in sound energy, and is roughly the smallest change of intensity that the human ear can detect The intensity of a sound being a purely physical matter can readily be measured by means of microphones but loudness is a psychological concept and its measurement must depend upon aural observations by human observers The method employed is to adopt a standard noise and to vary its strength on a known scale of energy units until it is judged to be as loud as the noise being tested For this purpose a pure tone of frequency 1000 cycles per second, about two octaves above middle C, has been chosen as the standard and the zero has been placed near to the threshold of audibility of the 1000 cycle tone If a noise when tested is found to match the standard when the latter has an intensity of *n* decibels above zero, the noise is said to have a relative loudness of *n* 'phons' On this scale the human ear has a range of from 0 to 130 phons a quiet whisper has a loudness of about 20 phons ordinary conversation 60 phons, and a pneumatic drill 100 phons The adoption of this standard has made it possible to construct noise meters by which the equivalent loudness of any given noise can be read off on a scale and these will very much simplify the devising and enforcement of legislation to suppress noises that exceed an agreed acceptable standard Dr A H DAVIS, of the National Physical Laboratory in a recent addition to the "Changing World Library[2] gives an account of the progress which is being made both at the laboratory and by private firms in reducing absorbing, or excluding noises of all kinds and the non technical reader will be delighted to learn from him how with a certain financial outlay, he can attain quietness though his home is next door *to a boiler factory*

A less hopeful outlook confronts those to whom not only the loudness of adventitious noises but music in any form constitutes an unpleasant and when prolonged, an almost unbearable experience The poetic tradition that they are to say the least untrustworthy neighbours maligns them they are usually patient if unhappy ones Their number seems to be growing—or is it merely that nowadays they dare to confess their aversion braving alike the contempt of those whose trained appreciation of fine music is delicate without being fastidious and those others who turn on the wireless as a routine on entering a dining room or even a library? The present cult of the gramophone by the young has one advantage over that of the pianoforte imposed on their predecessors—it *requires no practice—and the tunes emitted from* any one instrument are thus as a rule but not always more varied. But the production of what might be termed a negative acoustic is desirable to bring relief where it appears to be most needed—by the occupants of flatlets who have no control over the sounds inflicted upon their unwilling ears and have no other room

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[1] *Nature* Sept 11th 1937 p 446

[2] Noise By A H Davis D.Sc. Principal Scientific Officer in Physics D[illegible] National Physical Laboratory London: Watts and Co [illegible] 2s. 6d.

ANNOTATIONS

THE PITUITARY AND GASTRIC SECRETION

SEVERAL years ago Prof E C Dodds and his associates[1][2] reported in these columns that animals injected with posterior pituitary extracts developed necrosis of the acid-secreting area of the stomach The dose of vasopressive principle necessary was extremely high and it was not possible at that time to assess the significance of the phenomenon Subsequent research in the same laboratories, however, has brought to light new facts, of considerable physiological interest, which have now been described[3-6] in detail The first aspect of the problem to be examined was the effect of the extract, in doses more nearly approaching physiological levels, on the secretion of gastric juice Gastric fistulæ were established in animals and secretion was provoked by various stimuli such as histamine, insulin, sham feeding and pilocarpine It was found that whatever the stimulus, the response could be reduced by injections of pressor extracts of pituitary tissue It was also found that these extracts inhibit the normal response of the pancreas to secretin The fact that barium chloride was observed to have a similar effect suggested that they exerted their effect by constricting the gastric vessels The experiments were accordingly repeated in animals so prepared that gastric secretion and blood flow through the stomach could be measured simultaneously It was found that the increased secretion caused by the stimuli mentioned was always attended by an increase in blood flow and that when the pituitary extract was given blood-flow, as well as secretion, was checked Secretion is not simply a function of blood-flow, however, because vasodilatation, induced by warming the stomach, did not lead to increased secretion In a further series of animals the experiments were repeated after hypophysectomy and it was found that in such animals the normal correlation between secretion and blood flow was disturbed These experiments throw light on the necrotic lesions which follow larger doses of the vasopressive principle The pronounced effect of the latter on gastric circulation, and the fact that barium salts cause similar lesions, indicate that vasoconstriction plays an important part in causing these lesions The importance of the vascular factor is also suggested by Byrom's observation[7] that infarcts which are demonstrably ischæmic in origin can be produced in the kidneys by injections of posterior pituitary extract There is little occasion for surprise that such enormous doses of so powerful a vasoconstrictor should lead to ischæmic necrosis The interest lies in the localisation of the necrosis in the case of the stomach, to the oxyntic area The work of Dodds and his colleagues helps to explain this localisation They find that necrosis does not occur if the stomach contents are kept neutral, and since the inhibitory effect of the vasopressive principle is directed mainly to the volume rather than the composition of the gastric juice it is evident that the presence of acid in the stomach at the time when secretion is inhibited forms an essential condition to the development of necrosis Whether these experimental lesions bear any relation to gastric ulceration in man remains to be seen, but new light on the mechanisms governing gastric secretion can hardly fail to be helpful sooner or later in the study of gastric disease

EDUCATION OF BACKWARD CHILDREN

UP to the present time only a few education authorities have made special provision for backward children and a pamphlet issued by the Board of Education on the subject[1] may serve as a stimulus to effort in this direction The pamphlet is essentially a plea for the early discovery of backward children in the schools, for their individual study, and for suitable treatment The term "backward" is used in the sense of educational backwardness, whether due to inherent dullness or to extraneous causes, but the main part of 'pa argument relates to the former class which hose w the largest Backwardness is of course no st those an intellectual matter Slowness in acqui or without oth social attitudes, skills and habits of chronic prostatitis may have physical, emotional, or acute and chroni ses Intelligence quotients (I Q d at ninety days f measure actual or potential powe n the first group do not express the whole personal n the first group chiefly designed to give hints to te ceived fever and methods of teaching particularly tho e of treatment powers of abstraction and generalisati twenty and and for whom practical experience of th concrete is more essential Emphasis is laid on the desirability of cultivating the child's natural interests, providing reasonable freedom of movement and activity, and of training on practical rather than on academic lines These children are not essentially different from their normal fellows and therefore the methods of education applied to them should not be radically different Opportunities of mingling freely with children of higher intelligence than their own, it is stated, should be within their reach While the suggestions of method are primarily intended for the dull group with I Q 's over 70, they are meant to be applied also to the feeble-minded who are only an extreme degree of the dull group "It will probably be found," it is remarked, "that the methods of teaching dull children which are recommended will be equally helpful in dealing with children who are even more retarded" The implementation of this suggestion would hardly be compatible with the "special school" system under which the children are usually separated educationally from their normal fellows In this pamphlet there is merely casual reference to the fact that "feeble-minded children when discovered are placed by some local education authorities in special schools" Those who have no occasion for studying legislation in this respect would scarcely guess from this statement that it is a statutory duty imposed upon local education authorities first to discover the feeble-minded, and secondly to provide special schools for them

Under the Hadow scheme of reorganisation the provision for the education of the vast majority of backward children is regarded as satisfactory For the rest, reference is made to experiments going on in certain areas By ignoring the contribution made by the special schools to the problem of the education of the dull, the pamphlet may be expected to raise controversy While few may dispute the desirability of abolishing the application of the term "mentally defective" to certain grades of educable dull children

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[1] Dodds E C Noble R L and Smith E R *Lancet*, 1934 2, 918

[2] Dodds, Hills G M Noble and Williams P C, *Ibid* 1935, 1, 1099

[3] Dodds Noble Scarff R. W and Williams *Proc roy Soc* B 1937 123 22

[4] Cutting W C Dodds Noble and Williams *Ibid* p 27

[5] *Ibid* p 39

[6] *Ibid* p 40

[7] Byrom F B *J Path Bact* 1937 45 1

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[1] H.M Stationery Office 1937 Pp 68 1s

many will stoutly oppose any suggestion of their removal from special schools The view that segregation of groups of children suffering from hampering defects does them harm appears however to be increasingly held and to pervade this pamphlet.

A NEW OPERATION FOR PHTHISIS

TEN years ago Babcock [1] described an operation for aneurysm of the thoracic aorta in which he constructed an arteriovenous anastomosis between the common carotid artery and the internal jugular vein Bennett [2] has this year reported a case in which Babcock performed the operation on a patient with advanced bilateral phthisis The result was a substantial improvement both symptomatic and general but ten months later a pulsatile swelling developed at the site of the anastomosis and a second operation became necessary at which the anastomosis was obliterated by proximal ligature After this the patient s condition deteriorated and he died within a year

It is claimed that the general hyperæmia of the pulmonary circuit which follows jugular-carotid anastomosis may help to arrest the tuberculous process and also that the continuous addition of arterial blood to the venous blood in the lesser circuit should diminish the rate and amplitude of the respiratory movements There are many practical and theoretical objections however to the general use of this operation in the treatment of pulmonary tuberculosis Serious harm might be done by the sudden interference with the vital mechanism of the carotid sinus which is one of its inevitable results and not everyone will agree that increased diastolic filling of the heart is to the organ s advantage At the same time the method is one of extraordinary interest All other operations for pulmonary tuberculosis have aimed at a local effect—the collapse of a patent cavity, the incision of a cavity or even the removal of a portion of diseased lung Even the rather indirect operation of ligature of the pulmonary veins from a lobe of the lung was designed to counter the disease in that particular lobe It is this local nature of the surgery of pulmonary tuberculosis that excludes a large number of patients from its possible benefits even when it is clear that conservative therapy cannot preserve their lives

THE PROGRESS OF MEDICINE

Dr Simon Flexner went as a student to the School of Medicine at Louisville in 1887 and in an address [3] delivered at the celebration of the centenary of the school last April he surveys the shifting pageant of American medicine as he has seen it during fifty years—years which have covered a revolution in medical education and something like a revolution in medical practice such as we have hardly experienced in this country The modern developments of American medicine are he says of German origin partly through the physiologists such as Johannes Müller and the chemists who believed in laboratory work such as Liebig and mainly at a later period through Virchow's morbid anatomy and Cohnheim s experimental pathology which started off W H Welch and Mitchell Prudden, whose book on bacteriology met Dr Flexner in 1889 Another landmark he notices is the foundation of the Johns Hopkins University and Hospital in 1876 and Huxley's inaugural address which urged the necessity of a preliminary training in science for medical students and he rightly attaches great importance to the freedom with which the senior staff were collected up and down the country with no other consideration than their suitability Early in this century the example of some of the eastern schools showed up the deficiencies and worse of many of the institutions which purported to train medical students, and the American Medical Association, backed by Dr Abraham Flexner s report to the Carnegie Foundation brought about a peaceful improvement so quickly and relatively so easily that its necessity was proved up to the hilt After this progress went on apace the Rockefeller Foundation put a number of the schools into good trim and in 1914 full time academic professors of the clinical subjects were instituted at Johns Hopkins Meanwhile, along lines less directly clinical the Rockefeller Institute under Dr Simon Flexner himself *was pursuing its distinguished and productive career in adding to fundamental knowledge in medical science* Most *important* of all and more difficult to describe and document, has been a complete change of atmosphere What we miss in this interesting sketch is any appraisement of the changes in medical practice in which improvement has been as considerable as in the medical and near medical sciences on which Dr Flexner chiefly dwells The particular eminence from which he has watched what was going on would not bring them into very clear view and it may be that he rightly assumes that if the foundation is sound the superstructure can be left to itself But we cannot help feeling that he has in some degree overlooked the fact that the progress of medicine can ultimately be measured only in its capacity to prevent alleviate *and cure disease*

INDUCING FITS FOR DIAGNOSIS

IN doubtful cases of epilepsy it may occasionally be justifiable to induce a fit for purposes of observation and diagnosis Various methods of this ‘provocation diagnosis have been tried Hyperventilation may sometimes succeed induced water retention more often gives positive results The administration of convulsant drugs is an obvious means of achieving the desired object but would need very cautious use Recently Duensing [1] has been experimenting with Cardiazol (pentamethylentetrazol, metrazol) and he reports that the rapid intravenous injection of 3 c cm of a 10 per cent solution of this drug will induce a major fit in two out of three recognised cases of epilepsy Those that fail to respond are not necessarily the cases with most infrequent fits The induced fit is always generalised, even in patients who have previously only had localised attacks or psychic equivalents and the method is therefore of no help in the observation of attacks due to local brain lesions Further objections appear when the results of the similar administration of cardiazol to non-epileptics are studied Half of a group of mental defectives gave a positive result, and it was found that their sensitiveness to cardiazol had no relation to the degree of defect nor more important was the family history with regard to fits any different among those who reacted and among those who did not A quarter of a group of people who were neither epileptic nor mentally deficient and who showed no sign of organic disease of the central nervous system had fits following a similar dose of cardiazol and the same proportion of positive reactions was observed among schizophrenics It will be remembered that induced cardiazol fits are being used in schizophrenia for therapeutic purposes.[2]

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[1] Babcock, W W *Ann clin. Med* 1926 4, 933
[2] Bennett R J *Canad med Ass. J* 1937 36 131
[3] *Science* 1937 85 605

[1] Duensing F Mo 911

If we assume that a tendency to the convulsive form of reaction is inherent in the make-up of the central nervous system, it is tempting to regard a positive reaction to cardiazol as diagnostic of all the potential as well as the actual epileptics in the population. But, as Duensing points out, we should not be justified in doing this, for the presence or absence of a reaction is determined not only by the inherent tendency to convulsions of the individual but also by his sensitiveness to the particular drug used. It is, however, interesting to note that in the normal group the younger people, whose central nervous system is presumably less stable, show a higher proportion of positive results.

Duensing is not inclined to allow that the induction of fits has any undesirable after effects. Vomiting is fairly often seen, and there may be complaint of headache or malaise the following day; while those who do *not* have fits may complain of giddiness or a feeling of fear. But even if no harm is done the fact that there is no dose small enough to produce a fit in an epileptic which *may* not also cause a fit in a non-epileptic greatly detracts from the diagnostic value of this procedure. This objection does not apply to the induced water retention method as described, for instance, by Clegg and Thorpe.[3]

OFFICIAL STATISTICS

EVERY year the Stationery Office issues innumerable volumes containing increasingly bigger and better statistics collected through official channels on most, if not every, subject under the sun. One may be interested in the special areas or the special constables, the mercantile marine or metalliferous mining, the health services, or the herring fisheries: some Government publication will contain the statistical information one requires. He who runs may read, but the question, in the face of this spate of material, is where to run to. The answer is to be found in that admirable vade mecum, the guide to current official statistics of the United Kingdom: the fifteenth annual volume of which has just been issued by the Permanent Consultative Committee on Official Statistics.[4] A few minutes with this publication will guide the faltering steps of the inquirers to all current official publications that contain statistics bearing on his subject, and, still more, will inform him of the nature of the statistics he will find in the volumes to which he is referred—i.e., their mode of analysis and the time and place to which they relate. For instance, if he is interested in small pox the entries under this heading will reveal to him that from the Registrar General's reports he can obtain statistics of cases and deaths for each week and quarter of the year in defined areas of the country; the Ministry of Health will tell him in one publication the cases notified on vessels and their port of destination, in another the number of vaccinations and conscientious objections in England and Wales; the health reports of the services will instruct him on its incidence in the Navy, Army, and Air Force; and so on. Or if he is more interested in smuggling the guide informs him that the twenty-seventh report of the Commissioners of H.M. Customs and Excise will afford him particulars of seizures, number and quantities, of persons convicted and the penalties recovered. No earnest seeker after statistical truth will grudge an annual shilling for this useful handbook.

POST-TRAUMATIC SEQUELS OF HEAD INJURIES

THE lack of reliable information about the later course of cases of head injury was deplored by Prof. E. Mapother at the section of neurology and psychological medicine of the B.M.A. meeting at Belfast in July. It is some comfort, however, to learn that after examining the available evidence, he concludes that there has been no substantial rise in insanity corresponding to the greatly increased number of motor car accidents in the last few years. Figures from Germany which suggest a rise in that country are not very convincing because mere scalp wounds are not differentiated from graver lesions. Any estimate is moreover complicated by the fact that many psychotics of mild degree remain at home, being sufficiently amenable not to require hospitalisation. Mental irritation developing after injuries to the head is, according to Prof. Mapother, of doubtful pathogenesis, but is important from the point of view of prognosis. The subsequent discussion turned partly on the relation of Korsakow's syndrome to cranial trauma. It was considered doubtful to what extent disturbances of outlook and volition could be attributed to accidents, whether sustained in motor cars or in the boxing ring. Acute schizophrenia was said to arise commonly in the course of healing from damage caused by trauma; the sequelæ of such damage were closely related to the original lesion, in contrast with those of post-traumatic epilepsy. Dr. J. Purdon Martin detailed more precisely the psychological sequelæ. Dr. F. E. Pilkington, discussing treatment, deprecated the use of bromides, particularly in patients who had even mild arteriosclerosis, and cited examples of the consequences of giving them. He said that 60 per cent. of patients discharged apparently cured after these car accidents betrayed some symptoms of the smash years afterwards, and the prognosis given should thus not be unduly optimistic. The team guiding treatment should include surgeon, physician, and psychiatrist. The patient ordered prolonged rest must not be allowed to fancy himself neglected. Adequate sleep must be secured, if necessary by hypnotics, and reassurance was of course helpful. The fear of going mad was not uncommon. Compensation hysteria seemed to be becoming more common; it was best treated by a final lump sum settlement, but this was only possible after the diagnosis was definite and not likely to require revision. Dr. C. F. Winterstein contributed an exposition of the effects of punishment on boxers, which we publish on another page. Dr. W. Ritchie Russell held that more attention should be paid to the jarring of the brain; elderly patients stood this badly, though they might minimise at first the immediate results of a car accident. Young children, who had just learned how to talk, might lose six months of their apparent intellectual age after such accidents, and this should be taken into account when reassuring their parents. Dr. J. Thompson of Belfast thought that many post-traumatic symptoms might be ascribed to interference of the blood-supply to the cerebral cells. Another point raised was that any such shock to the brain interfered with consciousness at one level or another. This was a transitory phenomenon, and was not as a rule dependent on the degree of physical damage sustained. The possibility that some biochemical change was produced as in myotonia was mooted Phobias after accidents were said to be usually amenable to treatment by persuasion if such phobias are neglected serious and intractable personality traits may supervene In this discussion organic neurologists and psychiatrists met on common ground and their several contributions seemed to interlock in a way unusually helpful to both

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[2] Finiefs, L. A.: *Lancet*, July 17th, p. 131. Gillies, H.: *Ibid*, p. 131.

[3] Clegg, J. L., and Thorpe, F. T.: *Ibid*, 1935, 1, 1381.

[4] Guide to Current Official Statistics. Vol. XV, 1936. H.M. Stationery Office, 1937. Pp. 404. 1s.

MEDICINE IN CHINA

The latest report of the National Quarantine Service of China[1] makes sad reading at the present time We are accustomed to find in these reports not only records of the work done at each of the six quarantine stations but addresses and original articles of considerable value This number of the series lives up to its reputation with papers by the editor Wu Lien teh an account of modern trends in plague work by the senior quarantine officer (C Y Wu) a well-documented description of Chinese emigration by F S Wong and a discussion of air temperature and humidity in relation to health by J W H Chun. Once largely a European organisation the Quarantine Service is now run by the Chinese with some Western help during the transition period notably from the Health Section of the League of Nations Having little to boast about in their relations with China the West in I vers may well point with pride to the Quarantine Service since Western medicine is one of the few things which our civilisation has brought to China So far as prevention is concerned, however this is once more threatened as witness the epidemics of cholera reported from Hong Kong and Shanghai Meanwhile the missionary societies with their many hospitals are striving to increase and strengthen their personnel and equipment so that the forces of curative medicine at least shall be employed to the best advantage The need and the opportunity are evident from the letters we publish on p 709

GONADOTROPIC SUBSTANCES IN ACNE AND ALOPECIA

Now that belief in sepsis—focal local and general—as a cause of unexplained diseases is on the decline attention is being focused on the internal secretions The cure of the obscure is sought in the injection not so much of vaccines as of gland substances Acne with its conspicuous relation to puberty pregnancy and the menopause has early qualified for endocrinological attack. Bombarded with dead bacilli, it has swept round the orbit of vaccine therapy for a quarter of a century—latterly bathed in rays both visible and invisible And now we see it starting on a new cycle this time to the tune of the endocrine orchestra Will it meet an all illuminating comet ? Or will it come back again in 25 years time exactly as it is now leaving us ?

Acne and alopecia bear not the faintest resemblance to one another nor are they often associated It seems therefore improbable that exactly the same treatment should cure them both. Yet such is Pighini's claim[2] Injections of anterior pituitary body he says can cure acne alopecia and also rosacea. The number of cases he reports are not many—a great deal fewer than the injections required for the cure of any one of them He gave 11 patients with alopecia, 4 with acne and 1 with rosacea intramuscular injections of anterior pituitary extract combined with local treatment and of these 10 are stated to have been cured It is difficult however to exclude the effects of the local applications and so far as acne is concerned more credence will be placed in the results of Williams and Nomland[3] who had not only a group of patients receiving a gonadotropic *factor from* pregnancy urine but also a control group receiving sterile water Both groups—30 in all—had also intensive local treatment with lotions, compresses, and expression of the comedones, and when it came to weighing the improvement the difference between them proved insignificant Nevertheless McCarthy and Hunter[4] with hormone tests found that about 40 per cent of males with acne and 80 per cent of females had pituitary or gonadal dysfunction and it is interesting to note that in Williams and Nomland s series menstruation became regular in all the women receiving the hormone who had previously complained of irregularity and in half the controls

POST MORTEM ROOMS AT HOME AND ABROAD

Why are pathologists in particular morbid anatomists so little fastidious about the places in which they work ? To many detached observers some of our hospital post-mortem rooms must seem almost on a par with the operating theatres of pre Listerian days in the disregard *of ordinary standards* of facilities for cleanliness The *conception* of asepsis revolutionised the conduct of surgical operations because the interests of the patient demanded this reform The conduct of autopsies has not followed suit because the subject is beyond damage and only æsthetic considerations arise Even if these are deemed relatively unimportant there are grounds for improving the equipment of post mortem rooms in many of our teaching hospitals Convenience demands that pathological departments shall not be far from the wards and students should be encouraged to attend post mortem examinations and demonstrations Here they gather round the corpse examine the organs usually with ungloved hands which later receive a more or less adequate wash They may sometimes touch the dead bodies with the edges of their sleeves, and other parts of their clothing may be accidentally splashed A student who escapes such gross contaminations may yet get his hands bacteriologically soiled through contact with door handles and parts of furniture that dirtier hands have touched It is for this reason that many obstetricians and surgeons mindful of Semelweis forbid their dressers to attend autopsies. A better solution might be found in a fuller protection of the student In the beautiful new institute built at the Sabbatsbergs Sjukhus in Stockholm for Prof Bergstrand an anteroom is provided for the student who removes his coat and puts on a white gown and rubber gloves before entering the post-mortem room before leaving it he washes his gloved hands, removes the gloves, returns to the anteroom to take off the gown, washes his hands again before *putting on his* coat and goes away clean So much for *students* but what of flies ? Even recently *built post* mortem rooms are seldom so constructed *as to* prevent their free access to cases perhaps *of enteric* fever septicæmia pneumonia, and *so forth* Who knows where they go afterwards ? One could conjecture unlimited opportunities *for the spread* of disease by their agency In America *precautions* against flies are ubiquitous and windows and doors are protected with gauze screens as a matter of course Is it not time that we adopted this simple device? By a close collaboration between pathologist and architect the happiest results could be achieved The last few years have seen the erection of many fine buildings to house pathological departments other than those attached to teaching schools, and more are contemplated Some of them are institutes designed by and for an individual teacher and his disciples of this kind of institute it has been said wickedly that the proud director spends the rest of his days showing it to visitors Others are the outcome of municipal activity in improving hospital equipment, where there is sometimes a tendency to build over lavishly Perhaps the greatest need, however, to which we have often called attention, is decent provision throughout the country for the performance of autopsies ordered by coroners The post mortem rooms of some of the most modern mortuaries are not fly-proof but are in other respects satisfactory, no one who has not witnessed the disgusting conditions under which the work has to be done in many districts could believe that the tales told of them are not exaggerated

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[1] Reports of the National Quarantine Service Series VII 1937 Shanghai. 4 dollars U.S.

[2] Pighini G *Policlinico* 103 24 1884

[3] Williams G E. and Nomland R. *J Amer med Ass.* August 21st p 561

McCarthy L. and Hunter L. *Arch. Derm Syph.* N Y 193 35 211 (quoted by Williams and Nomland)

THE STRANGEWAYS RESEARCH LABORATORY REPORT FOR 1936

THE Strangeways Research Laboratory, Cambridge, under the direction of Miss Honor Fell, D Sc, has acquired deserved repute as a centre not only for the study of methods of cultivating living tissues, but for the application of these methods to fundamental problems of biology During 1936, according to its annual report, the laboratory has accommodated some 22 research workers, as well as providing instruction in the methods of tissue culture to many others The work falls into two main divisions One is concerned with the growth and development of cells and tissues and their organisation in embryonic development The other relates to the action of radiation on living cells Valuable work has been done by in vitro cultivation of mammalian and avian embryos and tissues, on organiser phenomenon, on histochemical changes during development, on bone, teeth, and blood-vessel formation, and on the factors influencing these Mammalian gonads have for the first time been successfully cultivated, and important information should now be obtainable on the influence of various factors upon germ cell development The effects of carcinogenetic agents and of parasitic fungi upon cells in vitro are also being investigated Physiological studies of the action of ions on the embryonic heart has led to some interesting results The radiological work deals mainly with the control of cell division by irradiation The effects of single exposures to gamma rays on embryonic mammalian eye have been observed Material examined six hours or more after exposure showed a wave of increased mitosis followed by a peak value of degeneration Earlier examinations showed that it was not possible to predict the exact type of response Work on the effect of gamma rays on tadpole tissue showed that, with the doses used, degenerate cells were only produced when mitosis was active in the irradiated tissue With divided doses the efficiency was determined chiefly by the interval between exposures The biological significance of a change of filtration of a gamma ray beam has also been examined, and bacteria have been exposed to the action of gamma rays

At present the laboratory depends almost entirely for its maintenance on grants and on the generosity of private persons 'It is essential for the work in progress that there should be a greater sense of security, the trustees urge the need of an assured income for the laboratory and make an earnest appeal for funds for this purpose It is very much to be hoped that the director, Dr Honor B Fell, and her staff will receive the necessary support

AN INTERNATIONAL PHARMACOPŒIA ?

PROJECTS for the preparation of an international pharmacopœia have been discussed for more than sixty years As long ago as 1874 an unsuccessful attempt was made to compile one on the basis of the then current French Codex, eleven years later, in 1885, a draft of an international pharmacopœia was placed before an International Pharmaceutical Congress held in Brussels Nothing came of it, the only full record is the Latin text, published in the official organ of the Pharmaceutical Society in that year Since then efforts to bring about international uniformity have been less ambitious, attention having been concentrated on the more potent drugs, but unfortunately no results of any consequence have been attained, and the position is much the same as that described by Dr C H Hampshire, secretary of the British Pharmacopœia Commission, in his address as chairman of the British Pharmaceutical Conference in 1934, which was commented on in THE LANCET at the time At the tenth general assembly of the International Pharmaceutical Federation held in Copenhagen at the end of August last, it was resolved that a committee of seven, drawn from different countries, should be set up for preparing a pharmacopœia, but while small committees may work more quickly than big ones, sixty years represents a lot of leeway to make up Something may happen much sooner than the International Pharmaceutical Federation suspects, other bodies have been at work and if the League of Nations makes a definite move in this matter before many weeks are passed, the Federation's committee will be saved work and anxiety Whatever the appropriate department of the League may do, however, it should not be forgotten that the ploughing and the seeding have been done by the International Pharmaceutical Federation

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ADDRESSING representatives of the Welsh local authorities at Cardiff on Sept 9th, Sir Kingsley Wood, the Minister of Health, said he hoped early in the new session to introduce in the House of Commons two important measures, one to reduce the age limit for the award of pensions to the blind and the other to provide medical care for young persons who had left school

AN International Congress of Obstetrics and Gynæcology will be held in Amsterdam from May 4th to 8th, under the presidency of Prof A H M J Van Rooy The main subjects for discussion will be eclampsia, thrombosis and embolism, and hormones, and those taking part will include Dr E Klaften (Vienna), Dr H Vignes (Paris), Prof. B *Stroganoff* (Leningrad), Prof K de Snoo (Utrecht), Prof R Remmelts (Batavia), Prof E Alfieri (Milan), Prof D Dougal (Manchester), Prof S E Wichman (Helsingfors), Prof G Wagner and Prof C Kaufmann (Berlin), Prof C Hartman (Baltimore), and Prof L Brouha (Liége) The secretary of the congress is Dr F C Van Tongeren. *The last International Congress was* held in Berlin in 1912

SPECIAL ARTICLES

WHEN IS CAPILLARY FRAGILITY A SIGN OF VITAMIN-C SUBNUTRITION IN MAN?

By GUSTAF F GÖTHLIN, M.D.
PROFESSOR OF PHYSIOLOGY AT UPSALA UNIVERSITY SWEDEN

By dietary experiment on a man and a woman whose capillary resistances to rupture were initially *normal* I was able to show that *subsistence on a diet extremely poor in vitamin C gradually gives rise to capillary fragility* (Göthlin 1931) The change proved to be reversible for with increasing doses of fresh orange juice the strength of the cutaneous capillaries slowly returned to normal

On these and other observations I based a method of ascertaining indirectly whether a person's supply of vitamin C is sufficient From the very first however I was fully conscious that in disease the capillaries may become fragile from causes other than a deficiency of vitamin C and in consequence I was also aware that the test should be used mainly for *healthy* persons This attitude found expression in the title of my first publication (1931 A method of establishing the vitamin C standard and requirements of physically healthy individuals by testing the strength of their cutaneous capillaries. With regard to persons suffering from digestive affections Öhnell (1928), using the so-called Hess's capillary test had previously taken a large number of petechiæ as an indication of latent scurvy

DEVELOPMENT OF THE CAPILLARY TEST

Since 1931 the use of the capillary test has developed I must make it clear however that this paper does not attempt to answer criticisms directed against capillary methods other than the one I have worked out and especially not the criticisms (Hawley Stephenson and Anderson 1936 Abt Farmer and Epstein 1936) directed against the so-called suction test (Hecht 1907 Borbély 1930 Dalldorf 1933) The basis of the over pressure procedure is clear and unassailable but this can by no means be said of the suction procedure.

A statistical investigation of my capillary test carried out in 1933 by Geschwind and Rundqvist (1935) has been published under the title "Tests carried out on 200 persons with Göthlin's method for determining the strength of the skin capillaries and statistical treatment of the results Their observations led to certain changes in the procedure I had described (1931 to 1933) which was intended in the first place for mass investigations The statistical investigation comprised observations on 200 persons, whose right and left arms were examined with the 35 mm as well as the 50 mm test The results led me from the beginning of 1935 wherever possible to make all *individual* determinations on both arms and proceed from the mean figure of the results on both arms

Outside Sweden very little attention has been paid to my suggestion that, in cases where *the strength of the capillaries is suspected of being subnormal* the stasis test ought to be made with the 35 mm over pressure also Experience in recent years however has shown the necessity of making both the tests in individual doubtful cases, for occasionally the 35 mm. test changes the result from normal to abnormal' When the test is made with both these pressures the determination with 35 mm over pressure must of course, precede the one with 50 mm. over pressure Nevertheless, certain circumstances argue against making the second test immediately after the first In a series of plethysmographic observations by Fånge (1934) on six students it proved that the return to normal volume in the fore arm after a test with 35 mm. over pressure as directed might take as long as 37 minutes. It will probably be unwise to make a fresh over pressure test while the vasomotor effects of a previous one remain To be sure of the return to vasomotor equilibrium I therefore decided not to make the test with 50 mm. over pressure until at least an hour after the over pressure test with 35 mm

In accordance with what has been said above an individual double-arm test resolves itself into the following systematic procedure *

The person to be tested either sits with both arms loosely extended at the elbow joints supported in such a way that the folds of the elbows are on a level with the heart (third rib) or lies on his back with his arms stretched out loosely on the supporting bed To a 5 branched star shaped piece of metal tubing runs a tube from an air pressure pump (for filling the system with air) fitted with a screw clamp a tube to a Politzer's balloon contained in a compressor (for exact regulation of the pressure) two tubes to the cuffs for the two arms and finally a tube to the manometer A first double-arm test is made with 35 mm over pressure and later—not within an hour—a fresh double arm test with 50 mm. over pressure Immediately before the treatment with 50 mm over pressure an examination is made to see whether any more petechiæ have appeared during the interval which is not uncommon In all readings the prescribed 5 dioptre lens must be used otherwise a number of petechiæ will be overlooked A lens of more than 5 dioptres must not be used for with it more petechiæ are discovered (Billing 1935) If lenses of more or less than 5 dioptres are used my principles for judging the results cannot be applied It is also necessary that the investigator should have full acuity of vision (10/10) and that the investigation should be made in full daylight or equivalent artificial light (daylight lamp)

A numerical index of the petechiæ counted is drawn up on the following principles. More importance as an indicator of fragility must be ascribed to a petechia after the lower over pressure of 35 mm than to one which does not appear until after the higher over pressure of 50 mm. Accordingly as an approximation every petechia which appears only with 50 mm. over pressure is counted as 1 whereas every petechia appearing with 35 mm over pressure is counted double. By adding together the number of petechiæ which appear within the delimited circular areas with a 6 cm diameter within the folds of both elbows when the 50 mm. over pressure is applied and twice the number of petechiæ within the same areas with 35 mm over pressure a *double-sided petechial index* is obtained, which is an expression of the fragility of the cutaneous capillaries at the time of investigation If the investigation has to be limited to one arm only—for example if it will have to be renewed within three weeks—a *one sided petechial index* may be drawn up on the same principles

My earlier work indicates that the borderline between capillary fragility and a normal (or nearly normal) strength of the cutaneous capillaries lies approximately at the double sided petechial index 12 —i e. the values that exceed 12 are to be regarded

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* A complete apparatus can be obtained from Kirurgiska Instrument Fabriks A. B Stockholm

SHORT WAVES AND SHORT-WAVE THERAPY

THE CONGRESS IN RETROSPECT *

THE scope of the International Short Wave Congress was a very broad one There were papers on all aspects of the subject production, transmission, and reception of short waves, absorption by chemical and biological systems, the distribution of heating in heterogeneous bodies, "specific" physical, chemical, and biological effects, and therapeutic applications While it is clearly impossible for any one person to be fully acquainted with all these branches, it is also certain that there were very few papers presented, even among the purely physical ones, that could legitimately be ignored by the medical man It was indeed one of the objects of the congress, as Prof **THIRRING** emphasised in his address during the opening ceremony, to enable some of the fundamental medical questions—mode of action of short waves, measurement of "dosage" in short wave therapy—to be discussed at joint sessions of the medical, physical, and biological sections The discussion has not, perhaps, brought us very much nearer to a solution of either of these problems, but it will have been invaluable if it has only helped a few short-wave physicists to think biologically, and a few short wave practitioners to understand the value and the limitations of a purely physical consideration of their problems

PRODUCTION AND APPLICATION OF DECIMETRE WAVES

The interest of the papers on the production of short waves, from the medical point of view, lies in the fact that they dealt predominantly with centimetre and decimetre waves The significance of this is clear enough these very short waves are becoming of increasing commercial value, and resources are being used for their investigation which would never be available for any purely medical purpose It is however inevitable that as soon as they can be produced at sufficiently high intensity these waves will be used therapeutically, and it is important that the new difficulties which their use will involve should be anticipated before they are widely and irresponsibly applied Preliminary papers on the therapeutic effects of 80 cm waves were indeed presented at the congress by **BRÜNNER ORNSTEIN** (Vienna) and **DÉNIER** (La Tour-du Pin)

With the use of higher frequencies, the condenser field method will become less important and will be replaced by a quasi-optical technique—true "irradiation," in which the properties of the tissue irradiated will be more conveniently expressed by its refractive index and optical absorption coefficient than by its conductivity and dielectric constant The possibilities of such methods are being worked out by **PÄTZOLD**, of the Siemens's research laboratories, Erlangen Pätzold has measured the *Halbwertsschicht* for various salt solutions—that is the depth of solution which is sufficient to reduce the intensity of an incident ray to half its initial value—at a wave length of 430 cm, finding values of 1 9–20 cm for the conductivity range 10^{-2}–10^{-4} ohm $^{-1}$ cm $^{-1}$, and is making further measurements at λ85 cm Such measurements are of the greatest importance, since the values of refractive index and absorption coefficient (or dielectric constant and conductivity—the constants determining heat production) measured at longer wave lengths are no longer valid—partly because of the increasing conductivity of water as the frequency is increased New absorption measurements on water, mentioned by **FALKENHAGEN** and by **ESAU**, show that the maximum absorption coefficient occurs at a wave length of about 2 cm

SELECTIVE HEATING

At the wave lengths at present in general use, the factors determining distribution of heat in tissues have long been understood theoretically, but the matter is in practice so complex that the proper choice of wave length for selective heating of a certain region, and the rough estimation of the degree of selectivity, have hitherto been impossible, clinical procedure has necessarily been empirical, and it is only recently that reliable values of the relevant constants for different tissues have been obtained It is a result of the cellular structure of tissues that at very low frequencies they have high apparent dielectric constants and comparatively low conductivities, at higher frequencies, the conductivity increases and the dielectric constant decreases, the manner in which this transition occurs depending on the type and even on the physiological condition of the tissue **RAJEWSKY** (Frankfurt a M) reported measurements of the conductivity of a number of tissues at different wave lengths, while **OSSWALD** (Erlangen) determined both *conductivity and dielectric constant*, and pointed out that for any reliable calculation of the most suitable wave length for selective heating of a given tissue, complete data of this type—"dispersion curves" for all the tissues concerned—must be available Osswald draws the important conclusion from his new data, *that for the greatest possible reduction* of heating of fat and the greatest selective heating of muscle, the following two conditions must be chosen (1) the *field must be made as homogeneous* as possible by the use of a wide gap between electrodes and skin, and (2) the shortest available wave length—1 m or less—must be used In general a selective heating of other tissues, excluding fat, will hardly be possible, but it should be possible when very short waves are available—e g, about 40 cm—to heat the pure body fluids (bile, urine, &c) without any considerable heating of the neighbouring tissues

The relative decrease in the heating of fat at shorter wave lengths, predicted from Osswald's results, has actually been observed by **PÄTZOLD**, **ESAU**, and **AHRENS**, who measured the rise of temperature of layers of muscle and fat placed in series in the condenser field At λ6 m, the fat was heated more, and at 1 m less, than the muscle

SPECIFIC (NON THERMAL) EFFECTS

On the scientific side, it cannot be said that any particularly significant new experimental data on non thermal effects were presented, a number of papers dealt with the effects of the condenser field on bacteria, moulds, viruses, &c and the best of these from an experimental point of view—to express a personal opinion—reported monotonously negative results Nevertheless a certain theoretical clarity was introduced in the paper of **KRASNY ERGEN**, who described the specific mechanical and electrical effects of the alternating or rotating electric field on heterogeneous systems—effects which would not, however, be sharply frequency specific, and which do not provide any starting point for a theory of specific *chemical* effects Such a theory would indeed be superfluous until satisfactory experimental evidence for a chemical action of the condenser field has been produced In an interesting paper, **KÖNIGER** (Brno) discussed the types of chemical reaction system which might be used in a search for such effects.

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* The first International Congress for Short Waves in Physics Biology and Medicine was held in Vienna in July A report from our Vienna correspondent appeared in THE LANCET of August 14th

TREATMENT

"Low Intensity" Therapy.—Meanwhile the therapeutic effects of exceedingly low intensities of ultra high frequency energy continue to be investigated, above all by LIEBESNY (Vienna, administrative president of the medical section of the Congress) who described the favourable effects of athermal treatment on furuncles, carbuncles, lung abscesses and certain tuberculous lesions. MULLER, LÖWY and FUCHS obtained equally satisfactory results in the treatment of inflammations of the middle ear, and HAUSMANN, RIEGER and RADINOWITSCH described the results obtained in the Viennese ophthalmological clinics.

The question of the relative effectiveness of large and small intensities in different pathological conditions arose very frequently during the medical sessions. MEYER (Paris) advocated the use of very small doses in treatment of angina pectoris, and emphasised the necessity for a very careful clinical selection of cases, although SIEGEN (Bad Kudowa), who also reported excellent results in various forms of angina, apparently used rather high intensities. URBACH (Prague) claimed to have confirmed the value of Liebesny's methods for a large number of acute inflammatory states with a few exceptions, while emphasising that chronic conditions, especially those which in general react favourably to other forms of heat treatment, require larger (thermal) doses. Several contributors to the discussion following KOHN'S (Erlangen) paper on the technique of gynæcological short wave therapy—RICHTER, SCHOLTZ, RIEMER, ROTHWIEN, WOLF—agreed on the value of very small doses in acute inflammatory conditions and of larger doses in chronic cases; indeed the same opinion was repeatedly expressed in other papers.

The Problem of Dosage Measurement.—The question of athermal treatment suggests immediately the problem of dosage: on what grounds do the advocates of weak dosage assert that the temperature rise in the patient is negligible? The usual criterion of dosage is a subjective one, and LIEBESNY himself pointed to its extreme unreliability. A chronic arthritic for example was repeatedly given a dose which led to a rise of 3°–4° C in skin temperature without his experiencing any sensation of warmth, and in other cases a rise of as much as 8° C was accompanied only by a "pleasant" warmth. The rapid objective measurement of dosage is however very difficult and most of the new methods suggested at the Congress are open to some objection, or are too complicated for general use. WENK (Erlangen) described a method, accurate to 5 per cent, in which the resonance curve of the patient's circuit is imitated in a substituted circuit consisting of condensers and fixed resistance, the loss of energy in the resistance being then read off directly in watts. The description of a second method, more rapid but less accurate (15 per cent), lacks essential details. MITTELMANN (Vienna) measures the current passing during treatment with a thermocross and the effective resistance of the circuit with a secondary transmitter and valve voltmeter. SCHWARZ suggests that for measurement of the true voltage across the patient small electrometer electrodes might be mounted in the condenser plates.

Short-wave Therapy in General.—SCHLIEPHAKE in his admirably restrained introductory paper emphasised the dangers of "automatic" use of short wave therapy in the hands of sisters and bath supervisors; he then mentioned the comparatively restricted pathological fields in which it has become definitely established as a therapeutic agency:

(1) Pyogenic skin inflammations, empyema of the accessory nasal cavities, pleurisy and lung abscesses. The correct dosage, still entirely a matter of guesswork, is essential, over-dosage being dangerous and under-dosage ineffective. The dosage can be gradually increased during the course of treatment.

(2) Various ophthalmological conditions, such as inflammation of lacrymal duct, iritis and retrobulbar neuritis.

(3) Chronic rheumatic arthritis. Here general treatment with large doses is usually necessary; the improvement is often considerably delayed, perhaps for several weeks after treatment has been stopped. The most severe cases of polyarthritis may show astonishing improvement.

The treatment of circulatory disturbances, including intermittent claudication, frost-bite and thrombo-angiitis obliterans, was several times referred to somewhat uncritically, and WOLF (New York) pointed out that a heat therapy would only be expected to be of value in cases where the capillaries have not suffered organic damage. For technical simplicity KOWARSCHIK (Vienna) recommends the use of the solenoidal field in such cases and for all local treatment of limbs.

COLARIZI (Rome) found that the early treatment of poliomyelitis gave most encouraging results and could be applied without danger even to the smallest children. MERDINGER (Cernauti) confirmed this report as a result of his experience in epidemics of poliomyelitis in Bessarabia. WOLF mentioned experiments in which apes injected with the virus were given fever doses of high frequency energy; most of them died of pneumonia.

FUCHS (Vienna) discussed the possible value and technique of combined Röntgen and short wave treatment, and ZIMMER (Berlin) suggested that the hyperæmia resulting from the latter may be responsible for the increased effect of X rays reported by several previous workers. IREDELL (London) described two cases, one of malignant disease and one of actinomycosis, which suggested that the favourable effects of radium were also somewhat increased by simultaneous short-wave treatment. Biological experiments on the production of mutations by X rays (PICKHAN, TIMOFÉFF RESSOVSKY and ZIMMER) have so far failed to show any sensitisation by the high frequency field.

PARIS

(FROM OUR OWN CORRESPONDENT)

POMARET'S LAW ONCE MORE

THOSE who have not seen earlier references to Pomaret's law in these columns may note that M. Pomaret was once a member of the French Government and is now a member of Parliament. His law, which by the way is only in the draft stage, concerns all the liberal professions, not only that of medicine. Its guiding principle is that employment must be found for the young by the compulsory retirement of their seniors at 65. The outcry against the proposal came in part from the young, inspired no doubt by chivalrous emotions as well as by the fact that even after 65 parents may be materially useful to their offspring. M. Pomaret was invited this summer to face the music, and he did so to such good purpose and with such good grace that there is every prospect of his original scheme being decently interred and a new one evolved under happier auspices. On June 17th he met the representatives of the Confederation of Intellectual Workers, the University Bureau of Statistics, the Confédération of French Medical Syndicates, the Confederation of Dental Syndicates, the National Veterinary Syndicate, the National Student Union, and representatives of the French lawyers and architects After a prolonged and friendly discussion, all concerned agreed on the desirability of preparing a scheme according to which the members of the liberal professions would be obliged under State control to contribute towards their own pensions, which could be claimed at 65, but the receipt of which could be deferred at the wish of their beneficiaries This pension scheme would also be applicable to widows and children M Pomaret, the University Bureau of Statistics, and certain actuaries have been requested to work out the details of this scheme as quickly as possible, in order that it may be thoroughly examined and discussed with a view to its adoption by Parliament at an early date

A DOCTOR'S BUDGET

Recent correspondence in *Concours Medical* throws some light on the financial problems of the general practitioner in France One writer, who professes to give not his own budget but a synthetic substitute which he says is representative of several general practitioners in the suburbs of Paris, puts the annual professional outgoings per doctor at 70,000 francs If some 30,000 francs be added to this sum for the luxury of a wife and family, a Parisian doctor must earn some 100,000 francs a year—£750 at current rates of exchange—if he is to hold his head above water and his family in its proper social place With regard to the 70,000 for professional expenses, 20,000 are allowed for the running of a car and 11,000 for paying and feeding a maid Taxes run away with 8000, the rent of a consulting room with 4000, the telephone with 2000, medical publications and post graduate courses with 1700, and a locum tenens with 4500 The other items in this 70,000 budget are individually small and of importance only collectively The same writer calculates that the average cost to a doctor of a consultation is 13 francs so that he is only 7 francs in pocket after a 20 franc consultation, or 12 francs in pocket after a 25 franc visit These fees for a consultation and a visit respectively are probably above rather than below the average even if no account be taken of those patients who act on the principle that it is better (for the doctor) to give than to receive

DEATH CERTIFICATE PROBLEMS

The Ministry of Public Health's new regulations for death certificates have caused much heart-burning Not a few mourn those happy days when, without having to inspect a dead body or make awkward inquiries of the relatives, one airily stated that Monsieur X was dead from natural causes Now we must hie ourselves to the house of death, and not only view the corpse, but also discover and state why the patient died Should our honesty be more in evidence than our tact, there is nothing to prevent an outraged widow from prosecuting us for the violation of the professional secrecy imposed on us not only by the best traditions of our profession, but also and very explicitly by the law Dr Paul Boudin, legal adviser to *Concours Médical* has some words of forensic wisdom to say on this subject He warns doctors against the making of incomplete or misleading statements on a death certificate, for once they are made there is no knowing where they may lead. A flat refusal to issue any death certificate is much safer for the doctor though what the other parties concerned with the death and burial of Monsieur X are to do in this event Dr Boudin does not say, presumably it is to be their funeral, not the doctor's, and it is in him alone Dr Boudin is for the moment interested It comes to this, that the interests and feelings of individuals, from the dead and his family to the doctor, have to be weighed against those of the public health authorities anxious to publish instructive vital statistics

Another problem arising out of the new regulations concerns the remuneration the doctor earns but may not receive for the execution of his new duties It is to be hoped that the civil authority—i e, the municipal officials—will collect these dues on behalf of the doctor as if they were so many rates and taxes, so that he does not have to send in a bill as for personal and private service to an individual For after all these new regulations are not so much for the immediate benefit of the defunct, his relatives and heirs, as for that of the State

DEATH OF DR ANTOINE BÉCLÈRE

Only a few weeks ago Dr Antoine Béclère published a most interesting paper in *La Presse Médicale* on influenza and on the comparative importance of its specific virus and Pfeiffer's bacillus Now he is dead, and the press is unanimous in honouring his memory as that of one of the greatest radiologists in France It was only last year that the radiological world celebrated his scientific jubilee, when the high honour of commander of the Legion of Honour was conferred on him A member of the Academy of Medicine, he was its president a few years ago, and he has also been president of the Medical Radiological Society of France One of his biographers has written "To analyse the radiological work of Antoine Béclère would be to pass in review all the medical applications of the X rays" He was, however, by no means shut up in the water tight compartment of his own specialty, and his interest in bacteriology was much more than that of the dabbling dilettante

THE LANCET 100 YEARS AGO

September 16th, 1837, p 889

From a lecture on Materia Medica and Therapeutics delivered at the Windmill street School of Medicine by Dr GEORGE G SIGMOND

The nettle has been employed as a rubefacient, and urtication, or the application of the urtica dioica to paralytic limbs or in torpid and lethargic affections, has been found very successful, the young shoots, or tops, are gathered by the rustic classes to boil in broth or gruel, the juice of the leaves has been employed in hemoptysis, a conserve of the flowers and of the seed allays irritation in the kidneys, and where stone exists, has been given, as an anodyne, with very good effect, a leaf of the nettle placed upon the tongue, and pressed hardly against the palate, has a very instantaneous effect in bleeding at the nose Even some of the species of the fig are narcotic and poisonous, thus the ficus toxicaria is highly poisonous, most of them have, however, the reputation of being generally demulcent, and slightly laxative, they have long been employed in domestic medicine as poultices, and our older writers on "Materia Medica," ascribe their introduction into use, in this way, to their being mentioned in Isaiah for the cure of Hezekiah, when "sick unto death," For Isaiah had said, 'Let them take a lump of figs, and lay it for a plaster upon the boil, and he shall recover" "This," as Professor Burnet observes, "was two hundred and sixty years before the time of Hippocrates, and is the most ancient cataplasm of which history makes mention"

From a leading article

Let us not be misunderstood,—though by this time parentheses of explanation are hardly necessary to ensure a comprehension of the views and language of THE LANCET

LETTERS FROM SHANGHAI

A HOSPITAL IN THE CIVILIAN WAR ZONE

THE following are extracts from letters sent home by Dr J L H Paterson superintendent of the Lester Chinese Hospital in Shanghai The hospital is staffed by missionary doctors and nurses appointed by the London Missionary Society but is financed by the Lester bequest and by business men both foreign and Chinese in the city Founded in 1844 by Dr Lockhart it was rebuilt in 1931 and now has 230 beds About 4000 in patients are received annually and the number of new out patients last year was 62 000

August 10th Monday—Real fighting broke out on Friday last beyond Honglew and round the North Railway Station That was when the Chinese claimed that the Japanese had broken the 1932 agreement by pushing vedettes &c out into Chinese territory—the agreement was that neither should send men into the strip of Chapei and Paoshan The Chinese then pushed regulars into this area and they started in earnest The Japanese put their flagship—the *Idzumo*—up by the Japanese consulate near the Garden Bridge and this has caused the most trouble of the troubles for the Chinese have been trying to bomb it and have not been good enough at the job

Saturday morning they first tried and hit a garage behind Broadway We got a lot of the casualties in from that. St Luke's Hospital had evacuated that morning Then their second attempt was terribly fatal for they dropped three bombs on the Palace Hotel and Nanking Road This was about 4 P.M. Cater and I were having tea when we heard the bangs but did not know things were so near the place was crowded with refugees Just as I went out to the roof garden I saw a great mushroom of smoke rise from the corner of Avenue Edward VII and Thibet Road. Very soon afterwards the victims started to come—a long line of vehicles of all descriptions lined Foochow Road—coming into hospital depositing their burdens and clearing off From then on till late at night more were being picked up and brought in

Foreigners (mostly Russian) were dressed and sent on to the Country Hospital. We got about 400 cases Paulun Hospital 100 and the French Ste Marie Hospital about 400 The staff worked splendidly—never a let up—and everyone from coolies up doing their level best. Four senior surgeons were in the four operating rooms hard at it till nearly 11 P.M. All light cases were dressed and sent out to return next morning Heavier cases that could be fixed up were operated on and sent to a temporary hospital near by while we kept the most serious We had 70 corpses in our backyard by midnight and there has been no means of getting them away till to-day when they had increased to 105 It was a ghastly business blood flowing everywhere But everyone did nobly throughout. Yesterday was a quieter day but we had about 75 in The consul has advised all women and children to evacuate (I had to run down a minute ago with some sort of alarm but it was only that the nose of an anti-aircraft shell had come through the autopsy room skylight—the second to drop within the compound) As I write this a fierce cannonade is going on round Honglew and Pootung—some pretty big stuff being put over

We all keep well though a bit tired. It is unfortunate that the trouble broke out just after two of our sisters went off for holiday—Miss Dey was due to arrive from Kuling last Friday but was held up at Nanking where she still remains I believe Miss Sharpe and Miss Smith have been splendid Dr Towers above praise and Cator and the other surgeons splendid all through Gas has been cut off but we have coal for steam for some time still All of us on the top floor are messing together to save cooking as it has to be done largely with small electric heaters and charcoal. Food for hospital is almost unobtainable so we are having to fall back on our stocks—laid in last week

We are using dressings up fast but I put a notice in two papers asking for old linen and there has been a good response We have had several volunteers working cutting up gauze and rolling bandages and looking after a bunch of fourteen derelict babies We have the little ones laid out on mattresses—four to a mattress—and they are a noisy crew in a side-room One man brought in ten cases of condensed milk this morning another a pile of samples of cloth from his office another went hunting for other supplies and so on Fine work.

* * *

Tuesday—Nothing much to add—a very noisy night Gas warning at 4 15 A.M. Got round to see windows all closed but only cordite fumes I think. Fierce bombing and gun fire from Garden Bridge down river

Hospital is of course very full indeed and very busy; about 90–100 cases a day since Sunday many are bad wounds, cranial and abdominal. The surgeons have been doing a roaring business But it is slacking off a little The chief trouble in one way is the number of people brought in as suspected spies or Japanese after being set on by the crowd Koreans Chinese and even to-day a Philipino—the champion boxer of Shanghai I have had quite a job looking after them till police protection comes along There has been a little rioting chiefly at rice shops but with such enormous numbers of refugees in the place it is only to be expected Some say there are over 200 000 in this part of the settlement alone

Japanese planes are just passing overhead on night bombing I suppose—but that will be far enough away The Lester Institute has been turned into a hospital and the General Hospital staff and patients removed to it The Sacred Heart Hospital was evacuated to-day All this means more work, but with emergency hospitals to deal with the less urgent cases we will manage all right I have a number of people on the outlook for supplies of various kinds for us An hour or two ago I got a fine supply of morphine and syringes Morphine has run very short in the Settlement While writing this a telephone call told me that a friend is sending 1000 lb of cotton wool first thing to-morrow Three or four friends with cars are running round bringing in stuff I have located. But indeed if I am in a hurry for anything, I catch the first private car that comes into the compounds and send it off to collect. No one dreams of refusing I got a promise of 30 tons of coal to come in to-morrow and more if I can get transport While our staff so far as regulars are concerned is so depleted by folks away on holiday we have plenty of volunteer help

There are long lines of people coming hunting for missing relatives; plenty of sad faces leave the place—still missing—but a considerably number are found In the fourth floor west main ward as I was standing with Mr Baxter looking at the beds closely crowded—plank and stretcher beds in addition and about ten less urgent on mattresses on the floor—a group of four came in behind us and started looking at the patients Suddenly a man at the far end started yelling at the top of his voice and the group let off an answering yell and went off down the ward calling to him, and all the time they were coming he was shouting Pu yao ching (not very serious) Pu yao ching and pointing to his leg

One big sturdy man brought in with a little lad of six was in a very sad way—the lad was only a bit bruised and we got a woman refugee in the church next door to take and look after him. Dr Towers took him along to see his father and say goodbye Ten minutes later the father died The foster mother to-day announced she would not give up the boy for anything and is going to adopt him. Two narcosis without a few abortive attempts With regard to the other points raised, the giving of injections at fixed times is merely a matter of convenience to suit the routine of English mental hospitals, and ensures that the patient is examined by the medical officer The dosage is regulated by the condition of the patient, and the drug may be ordered or withheld as considered desirable A recent communication by McCowan (1936) from the Cardiff clinic (where most of the treatments have been carried out in this country) reads "In the majority of cases the injection is given at the same time each day" One need say no more on this point

I have searched my article in vain for any reference to "amnesia on 2 c cm of somnifaine per day," which is another point raised The only possible explanation is that the assertion made by me that there is amnesia for the period of induction is called in question On this matter I am quite unrepentant After 100 c cm of somnifaine in 20 days no patient is likely to remember the first few pin pricks I have perused the annual report of the Devon Mental Hospital (recommended by Dr Strõm Olsen in his letter) and, as the report deals with only 6 cases, cannot see that it helps to clarify the position

While no one questions that somnifaine narcosis is possible combined with insulin injections, most informed readers will agree with me in my contention that the success the advocates of the insulin somnifaine technique have achieved is due not to the combating of any assumed disturbance of carbohydrate metabolism by insulin but to increased experience of the action of the drug, and of the snares and pitfalls which beset the pathway of the novice in this most valuable form of therapy

I am, Sir, yours faithfully,

D MENZIES

Plymouth Mental Hospital Ivybridge Devon Sept 11th

REFERENCES

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INOCULATION OF HUMAN LEPROSY INTO SYRIAN HAMSTER

To the Editor of THE LANCET

SIR,—An experimental animal susceptible to human leprosy has long been wanted, for there is as yet no record of an experiment in which an animal has shown a massive infection after being inoculated with material containing Hansen's bacillus from a human case

During my recent visit to London Sir Patrick Laidlaw F R S —to whom I wish to express my thanks—informed me of the successful inoculation of rat leprosy into the Syrian hamster (*Cricetus auratus*) He said that experiments with human leprosy had not given the same results as with rat leprosy, possibly because suitable material for work was not available in London and he suggested that I carry out experiments in Palestine The results have exceeded all expectations, particularly in view of the fact that even monkeys have so far not proved satisfactory

The following method was adopted

Young animals were splenectomised and the skin in the neighbourhood of the incision was separated from the fascia of the abdominal muscles over a wide area without increasing the original incision—i e , by introducing a fine pair of scissors between the skin fascia and separating them as widely as possible A fragment of a human lepra nodule (obtained through the kindness of Dr T Canaan, the devoted physician of the Jerusalem Leprosarium) was placed in the space between the skin and fascia as far as possible from the splenectomy incision This incision was closed with catgut after the nodule had been embedded After it had been carefully closed the animal was further given an intraperitoneal inoculation of macerated leprous material The enclosed fragment lay in a space devoid of blood supply and became attached to the underlying muscle by fibrin Subsequently connective tissue formed, attaching the nodule firmly to the muscle Layer after layer of fibrous tissue formed round the original fragment until after six weeks there was a mass four times the size of the original implant

Three animals were treated in the above manner on July 23rd, 1937

Next day a hard mass, about 1 0 × 0 7 cm , not attached to the muscle or skin, was found under one of the mammæ on the right side of one animal It was suspected that this mass might have some relation to the previous treatment to which the animal had been subjected The tumour was removed and found to consist of a dense fibrous capsule surrounding necrotic tissue The origin of this tumour has not yet been determined, but it may have originated from one of the mammary glands In any case it had nothing to do with the inoculation of lepra Smears made from this tumour showed no leprosy bacilli At the time of biopsy it was noted that there were numerous lesions on the skin of the abdomen (abrasions and small patches without hair)

On August 31st one animal was found dead and unfortunately putrefaction was too far advanced to allow examination A second animal (the one from which the tumour had been removed) was found to be aborting and in a weak condition It was immediately sacrificed The following facts were noticed The tissue round the second operation wound was necrotic and covered with white curdy material The abrasions of the skin, particularly near the neck, were still noticeable A nodule about 1 cm in diameter was found implanted into the abdominal muscle, and smears from this nodule contained swarms of lepra bacilli typical in arrangement They were much more numerous than in the human nodule used for the experiments The site of the second operation was swarming with lepra bacilli The same bacilli were found in skin abrasions far removed from the site of the original inoculation *Lepra bacilli were also found in liver smears,* thus proving that a systemic as well as local infection had been established It is interesting to note that between August 24th and 31st leprosy bacilli had multiplied extensively at the site of the second operation

On Sept 1st the third animal was killed A fibrous nodule again about 1 cm in diameter was found adherent to the abdominal wall and again smears contained innumerable lepra bacilli The connective tissue in the immediate neighbourhood of the nodule was also infected

On Sept 1st a fourth animal was also examined This animal had been splenectomised on July 24th but the fragment of human material had been embedded in the muscles of the left thigh On biopsy not a trace of the original material was found on the site of implantation, but there was a large lymphatic gland in the left groin This gland was caseating in the centre, and smears showed innumerable leprosy bacilli

The fact that a heavy infection was established in three animals, and that in one of them there was a systemic infection, all within six weeks, prove that the above findings are not accidental and that in the Syrian hamster, at least under the conditions of experiment described above, we have an animal susceptible to human leprosy This will, no doubt, both stimulate and facilitate further research

It should be pointed out that the Syrian hamster is in many ways a very valuable laboratory animal Unlike the Chinese hamster it breeds readily in captivity It is useful for research on leishmaniasis and owing to its susceptibility to *Brucella abortus* (considerably greater than that of the guinea pig) it is the animal of choice for work on contagious abortion of cattle It has been bred in the Hebrew University Jerusalem since 1930 and colonies from Jerusalem have been successfully established at the National Institute for Medical Research in London and in Paris There should be no difficulty therefore in supplying laboratories with it

I am Sir yours faithfully

S ADLER.

Hebrew University Jerusalem Sept [illegible]

DERATISATION

To the Editor of THE LANCET

SIR,—It is evident from your report of the proceedings of the International Health Office (August 14th p 408) that deratisation of ships is now comparatively simple Presumably it can be left to the rats themselves to effect reratisation The question however that must now arise—and it is a question the International Health Office ought to face without delay—is whether the next step should be dereratisation or merely rederatisation I cannot help thinking that it might be wiser for the office to reconsider its terminology and outlook ab initio and concentrate in future on the deslupisation of rats

I am Sir yours faithfully

PATHOLOGOLOGIST

Queen Mary's Hospital for the East End E
Sept 8th

*** Our correspondent's letter recalls a protest against the word deratisation published in the *Medical Officer* of July 4th, 1936 The writer described it as the most agglomerate hybrid I can think of offhand formed of Latin prefix + A S noun + Greek inflexion + a vestigial Latin inflexion + O Fr termination " Who makes words such as these he added, and why do we use them ?—ED L

OBITUARY

ANDREW HUTTON WATT M B F R C S Edin

ON Sept. 3rd Dr Andrew Watt died at his home in Johannesburg having been ill for some months following an attack of influenza He was one of the pioneers in South Africa of diagnostic radiology especially in relation to affections of the chest and the fact that this specialised knowledge was only part of his wide equipment as a general physician gave to his interpretation of radiograms an exceptional value in diagnosis and prognosis His keen interest in disease especially silicosis and accidents arising in the gold mining industry led him to consent a few years ago to abandon his large consulting practice and to accept a full time post as chief medical adviser to the Rand Mutual Assurance Company His duties in this capacity lay not only in diagnosis and assessment for compensation, but also in supervision and treatment and included the planning of the new hospital just built by the company for the treatment of insured miners His last visit to this country was paid three years ago for the express purpose of collecting information in order to make sure of incorporating the best features of modern European institutions in this hospital

Andrew Watt was born in 1871 the son of Sir Thomas Watt of Edinburgh He was educated at the Royal High School and Edinburgh University After graduating in medicine with honours in 1897 After holding resident appointments at the Royal Infirmary and the Royal Hospital for Sick Children, he took his F R C S in 1899 obtained the coveted post of assistant to Sir Harold Stiles and set up in Edinburgh as a surgeon Soon however the formation of an Edinburgh hospital unit attracted him to volunteer for service in the Boer War After peace was declared he went back to South Africa taking with him an X ray plant one of the first to be set up on the Rand He held for a time with a general practice the part time post of medical officer to the Simmer and Jack Mine and helped to initiate and organise a system of training native hospital orderlies which has since been developed on a large scale About that time the realisation that silicosis was taking serious toll of the mining population aroused general interest in preventive measures and many of Dr Watt's suggestions for the improvement of conditions of work were adopted His influence in the enforcement of methods of allaying dust and of mine ventilation was much greater than anyone without inside knowledge would realise for his modesty was extraordinary and his ideas were more likely to be put at the disposal of informal committees than to be set out in detail in medical journals His publications were indeed few and mostly took the form of contributions to medical societies they included a thesis jointly with Dr Louis Irvine on miners phthisis on the Witwatersrand His intimate personal knowledge of the work of medical benefit societies was of considerable help in recent years to the South African Medical Council when they were called upon to advise the Government on appropriate legislation

This experience also stood Dr Watt in good stead when he left the mine hospital to become a consulting physician and radiologist in Johannesburg His association with the Rand Mutual Assurance Company at first on a part-time basis began shortly after the late war and the reputation of the company for fair dealing owed much to his wise counsel. At about the same time he became a member of the honorary staff of the Johannesburg General Hospital His work at the assurance company became more and more arduous as the mining industry grew and some ten years ago he decided to retire from consulting practice and devote his whole energy to its service The last few years of his life involved the strain of working under the burden of much physical disability He carried on with great courage His kindly courtesy was that of a strong man His patients trusted him and all branches of the profession held him in esteem he did more than his fair share of handling sick colleagues

It was the combination of radiological and medical experience grafted on to an early training in surgery with a keen clinical sense and a balanced appreciation of the value of laboratory investigations that ensured Dr Watt's professional success A friend writes:

Andrew Watt's personal qualities were no less distinguished He was a shrewd judge of human nature quick to detect and to expose vanity with kindly chaff His humour was dry rather than boisterous With characteristic modesty he used to say that every other member of his year had become renowned ; he alone remained a nonentity Like many other quiet modest people he was often a innovator He achieved his influ his he lacked the faculty of self He was a piece of Scot me, cook the dish and the number of people for whom it is intended, but the directions are in general clear and should help the reader to sense varied attractive and economical meals for her family

Appointments

BISHOP J C M B Birm Resident Surgical Officer at the Children s Hospital, Birmingham

HOWARTH RICHARD M.D Edin. D L O , Hon Aural Surgeon to the Prince of Wales s Hospital Plymouth

HUNTER, T A. M B Camb M.R C P Lond , Hon Medical Registrar to the Prince of Wales s Hospital, Plymouth

MACLENNAN H R M.D Glasg M.C O G , Senior Assistant Gynæcologist at the Victoria Infirmary Glasgow

PARRY RUPERT M.B Lond. F R C S Edin Hon Ophthalmic Surgeon to the Cardiff Royal Infirmary

STERN E S M D Camb M R C P Lond D P M Deputy Medical Superintendent at the City Mental Hospital Humberstone Leicester

Vacancies

For further information refer to the advertisement columns

Albert Dock Hosp , Connaught road E —Res M.O , at rate of £110

Aylesbury, Royal Buckinghamshire Hosp —Sen and Jun Res M O 's, £200 and £150 respectively

Ayr Glengall Hosp for Mental Diseases —Jun Asst M O £300.

Birmingham Children s Hosp —Res and Asst Res M O 's, £175 and £125 respectively

Birmingham Royal Cripples Hosp —Res H S at rate of £200

Blackburn Queen s Park Hosp and Institution —Res Jun Asst M O , at rate of £150

Bradford Royal Infirmary —Two H P 's and four H S s each at rate of £150

Brighton Municipal Hosp —Third Res Asst M O £300

Bristol General Hosp —Res Surg O and Reg £200

Bristol Royal Infirmary —Sen Hon Anæsthetist

Burnley Victoria Hosp —H P , at rate of £150

Cambridge Addenbrooke s Hosp —H P , at rate of £130

Central London Throat, Nose and Ear Hosp Gray s Inn road W C —Third Res H.S at rate of £75 Also Hon Assts in the Out-patient Dept

Chester, Barrowmore Tuberculosis Sanatorium and Settlement —H P , at rate of £150

Coventry Municipal General Hosp —Two Asst Res M O 's each £250–£300

Croydon County Borough.—Asst M O for Obstetrics £300

Dewsbury and District General Infirmary —Sen H S., £200

Doncaster Royal Infirmary —H P , £175

Dreadnought Hosp Greenwich S E —Receiving Room Officer, at rate of £200

Dublin City Skin and Cancer Hosp , Hume street —Deep X Ray and Radium Therapist £500

Durham C C Education Dept —Asst School Oculist, £500

Ealing Borough —Deputy M.O H £750

Eastbourne Princess Alice Memorial Hosp —Res H S £150

Elizabeth Garrett Anderson Hosp , Euston road N W —Clin Assts in Med. and Surg Depts Hon. Physician to Children s Dept Med Reg £100

General Lying-in Hosp York road, S E —Jun Res M O and Anæsthetist at rate of £100

Glasgow Corporation Mental Hosp Service.—Jun Asst Phys for Hawkhead Mental Hosp , £325

Guildford Royal Surrey County Hosp —H.P , at rate of £150

Hampstead General and N W London Hosp Haverstock Hill N W —Cas M O for Out-patient Dept , at rate of £100

Hosp for Sick Children Great Ormond street, W C —Res Surg O , £200 Also Res H P and Res H S each at rate of £100

Hospital of St John and St Elizabeth 60, *Grove End-road N W* —Res H S at rate of £75

Hove General Hosp —Sen Res M O £150

Hull Corporation Health Dept —Asst M O H for Port Sanitary Work, £600

Hull Royal Infirmary —Second Cas O at rate of £150

Infants Hosp Vincent square Westminster S W —Pathologist £700 Also H P , at rate of £100

Leamington Spa Warneford General Hosp —H.P and H S , each at rate of £150 Also Cas O and Jun H.S at rate of £150

Liphook, Hants King George s Sanatorium for Sailors —Asst M O at rate of £200

Liverpool, City —Res Asst. M O 's each £250

London Chest Hosp Victoria Park E —H P at rate of £100

London and Counties Medical Protection Society Ltd Victory House Leicester square W C —Secretary, £1250

London County Council —Two Part time Obstetricians and Gynæcologists £800 and £600 Asst. Pathologist £650 Asst M O s, Grade I £350 Asst M.O s Grade II, £250 Also Temp Dist M O 's £222 10s to £135

London Homœopathic Hosp Great Ormond street W C —Physician for Diseases of Children

London Hosp E —Two Hon Asst Dental Surgeons

London Jewish Hosp , Stepney Green E —Res M O and H P , at rate of £150

London Lock Hosp 283 *Harrow road W* —Res M O to Female Depts , at rate of £175

Maidstone, Kent County Ophthalmic and Aural Hosp —Sen. and Jun Ophth. H.S. s at rate of £250 and £200 respectively

Manchester Ear Hosp Grosvenor square.—Res H S , £120

Manchester Lake Hosp and Darnton House Ashton under Lyne —Jun Res M O at rate of £225

Manchester Monsall Hosp for Infectious Diseases.—Two Res Asst M O s each at rate of £250

Mansfield Harlow Wood Orthopædic Hosp —H S at rate of £200

Middlesbrough, North Riding Infirmary —Hon Dental Surgeon

Middlesex County Council —Asst M O £600 Three Res Asst. M O s each £400 Also Res Cas M O s each £350

National Hosp , Queen square W C —Hon Dental Surgeon Hon Asst Ophth Surgeon Also Refraction Officer 1 guinea per session

Oxford Wingfield Morris Orthopædic Hosp Headington —Res H S £100

Plaistow Fever Hosp E —Sen Res M O , £350

Preston and County of Lancaster Royal Infirmary —H S , at rate of £150

Reading Royal Berkshire Hosp —H P H S to Special Depts , and H S each at rate of £150

Royal London Ophthalmic Hosp , City road E C —Two Out patient Officers, each £100 Also Hon Asst. Phys

Royal Naval Medical Service —Medical Officer

Royal Northern Hosp Holloway N —Cas O , 4 gns a week. Also Res M O , £370

Royal Waterloo Hosp for Children and Wom n Waterloo road, S E —Res Cas and Orthopædic H S at rate of £150

Ruthin Castle —Physician £200

St John's Hosp Lewisham S E —Clin Asst. to M O in charge of the Electrical Massage Dept Also Med Reg to Out Patient Dept., each 50 guineas

St Mary s Hosp for Women and Children Plaistow E —Res Surg O and Res H P at rate of £155 and £150 respectively Also Hon Dermatologist

St Thomas's Hosp Medical School S E —Sen Demonstrator of Anatomy £400

Salford Royal Hosp —Hon Dermatologist

Salisbury General Infirmary —H S at rate of £125

Scarborough Hosp —Two H S s each at rate of £150

Smethwick County Borough —Sen Asst M O H and Asst School M O £650

South Mimms Clare Hall County (Tuberculosis) Sanatorium.—Res Asst M O £400

Taunton and Somerset Hosp —H P at rate of £100

Victoria Hosp for Children, Tite street Chelsea, S W —H S at rate of £100

Wigan Royal Albert Edward Infirmary and Dispensary —Res Med and Surg Officer and Reg , £250 Also Hon Asst Surgeon

Willesden Municipal (Fever) Hosp Brentfield road, N W —Res M. O £250

Winchester Royal Hampshire County Hosp —H S at rate of £125

Wolverhampton Royal Hosp —H S at rate of £100

Worthing Hosp —H P at rate of £130

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Brynmawr (Brecon) Ashby de la Zouch (Leicester and Cannock (Staffordshire)

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

HARVEIAN SOCIETY OF LONDON
THURSDAY, Sept 23rd.—8 30 P.M (26 Portland place, W), Dr R M Fry Puerperal Sepsis

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF GLASGOW
TUESDAY, Sept 21st —4 30 P M (Tennent Memorial Building, Church street), Dr John Marshall Diabetes

BRITISH POSTGRADUATE MEDICAL SCHOOL Ducane road W
WEDNESDAY Sept 22nd.—Noon clinical and pathological conference (medical) 3 P M. clinical and pathological conference (surgical)
THURSDAY —3 P M. operative obstetrics
FRIDAY —3 P M clinical and pathological conference (obstetrical and gynæcological)
Daily, 10 A M to 4 P M. medical clinics surgical clinics, obstetrical and gynæcological clinics and operations and refresher courses for panel practitioners

HOSPITAL FOR EPILEPSY AND PARALYSIS Maida Vale W
THURSDAY Sept 23rd —3 P M., Dr S Nevin demonstration

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole-street W
MONDAY Sept 20th, to SUNDAY Sept 26th —THE INFANTS HOSPITAL Vincent square S.W , all day course in children s diseases (suitable for D C H candidates) —WEST END HOSPITAL FOR NERVOUS DISEASES Gloucester-gate N W afternoon M R C.P course in neurology —ROYAL CHEST HOSPITAL City road E C., Mon Wed and Fri , 8 P M. advanced course in chest and heart diseases —NATIONAL TEMPERANCE HOSPITAL, Hampstead road, N W , Tues and Thurs 8 P.M. clinical and pathological M R C.P course —ROYAL WESTMINSTER OPHTHALMIC HOSPITAL High Holborn W C Sat and Sun course in ophthalmology —Courses are open only to members of the fellowship

MANCHESTER ROYAL INFIRMARY
FRIDAY Sept 24th.—4 15 P M , Dr T H Oliver demonstration.

ADDRESSES AND ORIGINAL ARTICLES

THE FUNCTION OF THE TONSILS AND THEIR RELATION TO THE ÆTIOLOGY AND TREATMENT OF NASAL CATARRH[1]

By Ivor Griffiths M B Lond B Sc Wales
F R C S Eng
ASSISTANT THROAT SURGEON TO THE BRITISH POSTGRADUATE MEDICAL SCHOOL, AND TO QUEEN MARY'S HOSPITAL FOR THE EAST END LONDON

The tonsils like the teeth are often suspected of being sources of focal infection Tonsillectomy in consequence has been somewhat indiscriminately applied indeed children's tonsils have been removed for such varied conditions as failure to gain weight hydrocephalus and mongolism Undoubtedly the operation is justifiable and necessary when the tonsils are seriously diseased or when they are causing inflammation of the cervical glands In a discussion arranged by the Fellowship of Medicine a few years ago[2] some speakers held that it had reduced the incidence of chronic ear suppuration rheumatism and adenitis; others attributed the improvement to better hygienic standards and improvement in nutrition.

A study has been made of 4500 children sent to hospital for the removal of tonsils and adenoids Most of them were referred from school clinics by medical officers but some were undoubtedly sent because relatives and friends assured the parents that the child ought to have his tonsils out The accompanying Table shows the principal abnormalities found and therefore shows what conditions are regarded by the medical and lay public as indications for tonsillectomy I propose to criticise these indications

Clinical Condition of 4500 Children sent to Hospital for Tonsillectomy

	Per cent
No symptoms *	31
Sore-throats	19
Cervical gland enlargement	15
Coughs and colds	14
Snoring and mouth breathing	9
General diseases	6
Deafness	4
Gross hypertrophy of tonsils	2

Tonsils found to be slightly enlarged on routine examination

There is widespread belief that the removal of tonsils and adenoids prevents infection passing to the middle ear but otitis media is sometimes seen in children who have lost their tonsils In my experience discharging ears and mastoid disease are not uncommon in children whose tonsils and adenoids have been thoroughly removed.

An investigation of 280 consecutive cases of *otitis media* showed that the tonsils had previously been removed in 104 of the other 176 90 recovered without interference In the remaining 86 cases tonsillectomy was performed and in only 30 of them did the otitis clear up In not a few cases otitis media appeared to be a direct complication of tonsillectomy thus in some children the disease is produced by the measure calculated to prevent it

The removal of adenoids immediately cures snoring when this is due to a large mass of adenoidal tissue but *snoring and the typical adenoid facies often persist after operation* and this throws doubt on the suitability of the treatment I have found that swelling of the turbinate bones and inferior conchæ is a common cause of snoring and is also frequently due to infection of the antrum. Adequate treatment of infected antra will often stop snoring in a few days.

THE SINUSES AND NASAL CATARRH

Most children between the ages of four and fourteen if examined regularly will show at some time or other red or enlarged tonsils. There seems to be a physiological enlargement of the lymphatic tissue between the ages of four and six and between thirteen and fifteen *Moreover tonsillar enlargement is a natural* accompaniment of the common cold but the tonsil returns to its normal condition when the nasal infection subsides.

The removal of tonsils and adenoids is widely recommended both in this country and America for the treatment of nasal catarrh. I have observed 385 severe cases nearly all of which returned to the clinic after tonsillectomy with their nasal catarrh even worse than before Most intractable cases of catarrh that I have seen had had their tonsils out before they came to the hospital.

It seems reasonable therefore to cast doubt on the indications which are popularly supposed to point to tonsillectomy and to suggest that there may be another explanation for the catarrh which is believed to be due to unhealthy tonsils I suggest that this explanation should be sought in the accessory nasal sinuses.

The maxillary sinuses appear during the fourth or fifth month of intra-uterine life, are well developed at birth, and have a capacity of about 5 c.cm. at the age of five. Thereafter they enlarge proportionately with the face and teeth. The frontal sinuses are sometimes well developed at the age of six but occasionally do not appear until puberty It is not uncommon for the frontal sinus on one side to fail to develop altogether The ethmoidal cells are present at birth the sphenoidal sinuses appear after birth but do not develop much before puberty The openings of the frontal sphenoidal and ethmoidal are at the lowest part of the cavity while that of the antrum is high up in the worst possible position for drainage when the head is erect

Foreign bodies (dust) and the slight mucous secretion of these cavities are removed partly by the action of the cilia, partly by suction and partly by gravity The current of the cilia is always directed towards the normal opening even if this involves working against gravity Negative pressure is produced in the sinuses during normal inspiration and during hawking and sniffing (O Malley 1935) During expiration the pressure in the sinuses rises, and it reaches its maximum during violent blowing especially if one nostril is stopped up Gravity can have but little effect because there is only one opening to each sinus It has even less effect on sticky material such as mucus or mucopus Nevertheless head movements are useful in relieving the cilia of some of their work: the antra empty when the patient lies on the opposite side As a result of disease any of these factors may be affected and the products of inflammation may accumulate.

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[1] Part of an investigation made at the Buckston Browne research farm and elsewhere under the aegis of the Streatfeild Trust of the Royal College of Physicians of London and the Royal College of Surgeons of England.

[2] *Post Grad. med. J* Dec 7th 1933

A CLINICAL STUDY OF NASAL CATARRH

Of more than 5000 cases examined for various nose and throat complaints, most of which had been sent for removal of tonsils and adenoids, I found nasal catarrh in a large proportion. Actual sinus disease was present in 385 children, 54 per cent of these had had their tonsils removed already. The patients were examined by the usual clinical methods: inspection, transillumination, radiography, and puncture. The child was not included in the sinusitis group unless the washings contained pus or mucopus, or, on microscopical examination, revealed epithelial debris or bacteria. In most cases the antrum alone was infected, but definite ethmoiditis was present in 15, and frontal sinusitis in 3 children. No sphenoidal disease was found, but this matter requires further study because no special radiological technique was used to investigate the sphenoidal sinuses. A number of the patients were less than a year old, and in many cases catarrh was said to have begun soon after birth.

A red, boggy swelling of the inferior turbinate bones, and presence of pus or mucopus in the middle ear or inferior meatus, were found to be strongly suggestive of infection of the antrum. The patients could be grouped into four clinical categories according to the dominant symptom:

(1) *Nasal type.*—These children suffer from constant nasal catarrh, but are usually in good health otherwise. Sometimes they snore at night and complain of sore throat, with or without pain in the ear. Acute otitis is not uncommon and chronic ear discharge often follows. No treatment of the ear is of any avail unless the antrum is also dealt with.

(2) *General type.*—These children complain of headaches and from time to time run high temperatures, often of "unknown origin," varying from 101° to 105° F. The headaches are usually generalised and vague, and it is rare to find any localising symptom such as tenderness or swelling of the face. Between attacks these children are dull, with pasty, muddy complexions. They lack energy and are backward in school. The acute manifestations are probably due to temporary occlusion of the opening of the antrum.

(3) *Pulmonary type.*—Antrum infection has been found in a considerable number of children suffering from recurrent bronchitis, with or without spasm, and suspected of pulmonary tuberculosis. Some of them had been in and out of sanatoria and convalescent homes for years. The most persistent symptoms are intractable cough and lowering of the general health. The effect of treating the antra has been striking, the cough sometimes disappearing after the first or second lavage. Experiments on dogs have shown that the cough is probably due to a train of infection passing from the upper deep cervical glands to the glands at the bifurcation of the trachea, which, when enlarged, irritate the sensitive large bronchi.

(4) *Referred types.*—These children show diseases in organs at some distance from the site of the infection. A few cases of recurrent rheumatism and nephritis have improved remarkably after adequate treatment of antral infection. Pickworth (1932) has shown that meningitis and other forms of intracranial infection may be due to nasal sinusitis. Le Gros Clark (1929) and Turner and Reynolds (1931) have described experiments supporting the possibility that infection may pass from the nasal mucous membrane into the cavity of the skull.

A striking feature of this investigation was that sinusitis was commoner in children who had had their tonsils removed than in normal children. This suggested to me that the tonsil, so far from being a danger, might actually have a protective function in the nasopharynx. I therefore undertook an experimental study of the lymphatic connexions of the air sinuses and tonsils.

LYMPHATIC DRAINAGE OF TONSILS AND SINUSES

The tonsil consists of a subepithelial collection of lymphoid tissue, which differs from ordinary lymph glands in its superficial position, in having no demonstrable afferent lymphatic vessels, and in being apparently immune from secondary malignant deposits. It is generally assumed that the lymphatic ring at the upper entrance of the air passage absorbs small numbers of organisms, with the result of establishing immunity by gradual dosage. If this be true, it is surprising that removal of the tonsils does not have a more obviously bad effect. Other workers have suggested that the tonsil has a digestive function, but this view has received little support. The most peculiar point about the tonsil is its position, which exposes the lymphoid tissue to the lumen of the pharynx.

The comparative anatomy of the tonsil has been described by Hett and Butterfield (1909–10), who have found a representative of the gland in all mammals, with a few exceptions such as the rodents. The tonsils begin to develop about the fourth month of intra-uterine life and do not begin to atrophy until old age. They undergo a physiological enlargement about the age of five and again at puberty, an enlargement which is more evident in certain types, such as auburn-haired females.

The nasal air sinuses are present throughout the mammalia in varying degree. The maxillary antra of man and the higher apes differ from those of other animals in having a smaller opening and in being relatively larger. Dogs, cats, and horses are known to suffer from sinusitis. Little work has been done on the lymphatic drainage of these sinuses because of great technical difficulties. Most investigators, including Rouvière (1932) and Most (1917), assume that the lymphatics pass to the ostia and so join the main trunks on the lateral wall of the nose. Lipiodol injection was first described in America, but there is doubt of the value of this method, for the oil is likely to find its way into the pharynx, simulating lymphatic infiltration.

I have tried the injection of coloured dyes into the nasal mucosa, the injection of mercury into the upper deep cervical gland, and the introduction of particulate matter into the nasal mucosa and sinuses. The last method proved satisfactory, and I was able to trace indian ink from the nasal air sinuses through the lymphatic glands to the tonsils. It may be that some of the particles find their way directly to the tonsil or that all of them first enter the upper deep cervical gland and thence pass to the tonsil.

EXPERIMENTS ON LIVING ANIMALS

FIRST GROUP

(1) *Dog.*—The antrum was exposed by the extranasal route in order to put trypan-blue solution into its deeper layers. The extreme thinness of the mucous membrane covering the bone made this operation rather difficult, but in 48 hours the dye could be seen in the submaxillary and cervical glands though no dye was demonstrable in the tonsil. This experiment was repeated with the same result.

(2) *Cat.*—Both frontal sinuses were exposed externally. The left frontal sinus was gently curetted. Into each sinus was placed a cotton-wool pledget soaked in trypan blue. The wounds closed. In 24 hours the dye was followed into the submaxillary and upper deep cervical glands. The most striking result of these experiments was the fact that the dye was traceable much further into the lymphatics on the side in which the mucous membrane had been curetted. Again no dye was seen in the tonsil. The dye was clearly visible in the lymphatic vessels

covering the face but microscopic section of this tissue failed to demonstrate the dye precisely enough for general acceptance

(3) *Cat* — The same experiment was performed and the animal killed after three days. The result was the same except that the dye was visible in the lymphatic glands situated at the bifurcation of the trachea. Again there were no elements of dye in the tonsil.

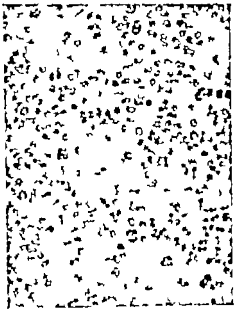
FIG 1 – Upper deep cervical lymph gland containing particles of ink. (× 50)

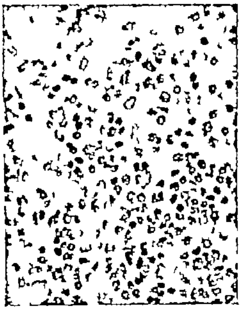
FIG 2 —Submaxillary gland showing particles of ink.

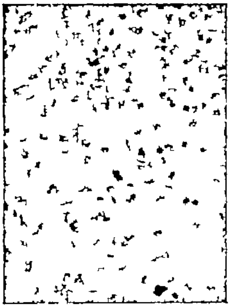
FIG 3.—Dog's tonsil after injecting antrum with indian ink. (× 300)

There were two objections to the foregoing experiments (*a*) The surrounding tissue became impregnated with the dye to a slight extent. Some previous workers on this subject have not taken this fact sufficiently into consideration. In dealing with lymphatic drainage of the nasal mucous membrane this point is of paramount importance because the drainage from the tissues of the face is an entirely different problem. (*b*) The dye even if recognisable to the eye could not be seen under the microscope.

I now decided to inject particulate matter into the sinuses and follow its course microscopically. Indian ink was used because the particles are easily discernible and because they resemble bacteria more than any other chemical substance.

SECOND GROUP

(1) *Cat* —The frontal sinuses were exposed by the extra nasal route. Cotton wool pledgets soaked in indian ink and thoroughly dried were inserted into the cavities of both frontal sinuses. The right side was curetted but the left side was not. The animal was killed in four days with the following results. The dye was found in (i) submaxillary chain of glands (ii) cervical glands and (iii) the tonsil (a small amount). There was also an appearance suggestive of ink particles in the bronchial glands, but this observation was not of much value because the normal bronchial glands of domestic animals contain a certain amount of carbon. (There is no carbon normally present in the submaxillary or cervical glands.)

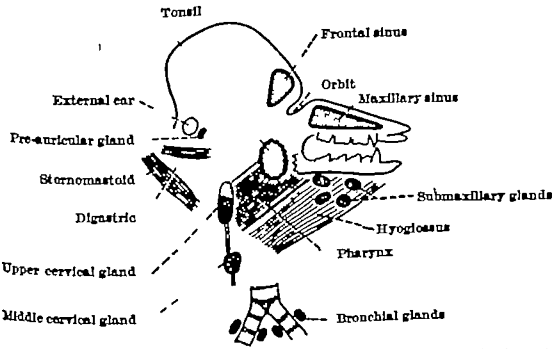

FIG 4.—Diagrammatic scheme showing the air sinuses the lymphatic glands and tonsil of a dog.

(2) *Dog* —The antra were exposed by reflecting the cheek from the maxilla. Small holes were burred into the antra. Indian ink was injected into the mucosa. Again it was found almost impossible to prevent contamination of the surrounding tissue. The results of this experiment were the same as previous experiments.

Because of these objections it was decided to abandon external operations on the sinuses and to attempt to introduce indian ink into the sinuses and maintain it in position by the intranasal route. The dog's antrum is accessible through the nose and it is possible to insert a pledget of wool into the frontal sinus of a cat through the external nares without any damage to any structure except a few anterior ethmoidal cells.

THIRD GROUP

(1) *Dog* —A large dog was anæsthetised. The linings of both antra were gently curetted through the nose. *Dry* pledgets of cotton wool previously soaked with indian ink were inserted into the antral cavities. The animal was killed on the third day. The particles of indian ink were traced microscopically and were distinctly seen in (i) the submaxillary chain of glands (ii) the upper and middle deep cervical glands; and (iii) the substance of the tonsil (a small but definite amount).

In these experiments the evidence points to the main drainage of the antral mucosa. The main drainage could be seen in the upper deep cervical gland, but it is important to note the proximity of this gland to the deep surface of the tonsil.

The foregoing experiments were repeated several times. The upper cervical lymph glands the submaxillary group of glands, and the tonsil were taken from six dogs. Photomicrographs of some of these sections are shown in Figs 1–3

(2) *Dog.*—Confirmatory evidence with other substances was sought: (*a*) Fixed green dyes were introduced using the same technique. The results of these experiments were negative because the dye was unrecognisable microscopically. (*b*) An emulsion of dead staphylococci was injected in the antrum. The emulsion was injected into one antrum and indian ink into the other. A great deal of indian ink was found in the tonsil on the same side. A minute amount was found in the tonsil on the opposite side. Staphylococci were not recognisable. The presence of indian

ink in minute amount on the opposite side suggested that there was a slight cross lymphatic drainage between the antrum of one side and the tonsil of the other

(3) *Cat* —A cat was anæsthetised with chloralose, and the frontal sinuses filled with cotton wool soaked in potassium ferrocyanide The upper deep cervical gland and the deep surface of the tonsil were exposed Small pieces of blotting paper, soaked in ferric chloride and dried, were used as test papers The animal was kept alive for 24 hours, but it was impossible to distinguish any flow in the lymphatic region exposed

The experiments so far described show that the antra and frontal sinuses drain into (i) the upper and middle deep cervical glands, (ii) the submaxillary glands, (iii) the tonsils, and (iv) the bronchial glands

To exclude the possibility of blood-borne deposits and also the probability of absorption from the intestine, the mesenteric glands were examined in some of the above animals, but no ink particles were found. Further confirmatory evidence that true lymphatic absorption was in progress was the fact that the greater the distance from the site of the injection, the less was the amount of dye found in the lymphatic glands

Fig 4 shows (i) that the course of lymphatic channels passing from the antrum to the upper deep cervical gland is a very simple one, and (ii) that the course from the antrum to the submaxillary group of glands is extremely devious This latter course, passing into the deep structures of the neck and then upwards again to the very much more superficially placed submaxillary glands, is a complicated path with the flow of lymph passing in a direction the reverse of what might be expected. It would seem a much more natural route for the lymphatic vessels lining the facial aspect of the antrum to flow directly into the tissues of the face itself and then descend into the submaxillary glands For this to happen it would be necessary for the lymphatic vessels to penetrate the outer wall of the antrum

A portion of this bony wall was removed and, under microscopic examination, there was evidence of indian ink in the periosteum covering the outer surface of the bone (Fig 5) This point is of some theoretical interest If this mode of flow actually occurs, then the theory that lymphatic vessels accumulate at the ostia is not the whole truth. The point is also of practical importance, because it might explain the early involvement of the submaxillary glands in some cases of malignant disease of the antrum, and also why these glands are not always affected in such cases

The presence of dye in the tonsil having been shown, it is important to be certain that it could not have reached the tonsil by any other route The experiment on the dog, in which one sinus was injected with indian ink and the other with cocci, is almost sufficient evidence, but it is necessary to eliminate all experimental errors as far as possible and to exclude the possibility that the tonsil absorbed small amounts of indian ink which had migrated down the pharynx

The following experiments were performed with this object in view —

ON HUMAN SUBJECTS

(i) Indian ink was sprayed three times a day for two days before tonsillectomy In one patient who had cryptic inflamed tonsils there was evidence of minute absorption (Fig 6)

(ii) In two cases with fairly normal-looking tonsils there was no evidence of absorption These results made it necessary to eliminate the possibility of surface absorption in our experiments on the dog

ON A DOG

The tonsils were completely embedded in the pharynx by stitching over the very loose folds of mucous membrane in front and behind the tonsils By this operation the dog's tonsils can be completely shut off from the pharynx There was much distortion of the pharynx and the dog had to be fed on a fluid diet for three days Section of the tonsils revealed unequivocal evidence of the presence of ink (Fig 7)

The experiment was repeated, injecting one sinus only Again there was obvious dye in the tonsil on the same side, and a minute amount of dye in the opposite tonsil

The tonsils were then injected directly with one drop of indian ink so as to compare the appearance with the tonsils obtained in the previous experiment In addition, the lymphatic glands were examined to compare them with the drainage direct from the antrum The upper deep cervical gland became heavily impregnated with ink particles

It is seen that the main drainage of the antrum and also of the tonsil is into the same upper deep cervical gland. Owing to the contiguity of the tonsil and this gland it seems possible that the tonsil might be involved, either directly or indirectly, by a retrograde flow from the deep cervical gland. This point is of academic interest, but the practical result of the experiment is that foreign matter entering the lymphatic vessels draining the air sinuses finds its way into the tonsil.

The disposition of the dye in the tonsil is of some interest Some particles are intracellular, some cells contain minute single particles, others show a large number Larger extracellular masses of particles are also seen Most of the particles appear to be carried to the tonsil by the lymphocytes

These experiments lead one to suppose that most of the particulate matter is carried by the lymphocytes to the nearest lymphatic glands, while crystalloid substances are mainly absorbed into the blood stream

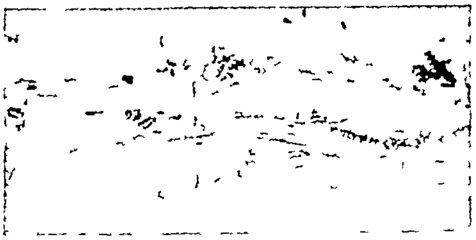

FIG 5 —Section of decalcified bone from superior maxilla periosteum containing particles of indian ink. (× 200)

Experiments were then conducted to ascertain the relationship between the upper deep cervical gland and the tonsil

The upper deep cervical gland of a cat and dog were exposed through an incision in the skin in front of the sternomastoid muscle One drop of indian ink was injected into the substance of the gland without displacing the gland from its bed The wound was closed, and the animal was killed in two days The tonsil on the same side was dissected via the mouth, and sectioned Figs 8 and 9 show some of the results obtained

The tonsils showed a heavy infiltration with ink particles, and in several places the particles were intracellular Serial sections of the tissue between the gland and the tonsil were taken, but none showed any conclusive evidence of ink particles in the intermediate lymphatic vessels, although some must have been in the intermediate tissue These experiments demonstrated the difficulty of actually discovering dyes in transit in the lymphatic channels

It is necessary to find an explanation for the fact that the particles travel from the nasal sinus to the tonsil. It may be that they go there for the purpose of destruction—if they are bacterial—or to enable the tonsil to form some bactericidal substance This function cannot be very important because there are so many more important sources of reticulo endothelial tissue in the body The other possible explanation is that the particles find their way into the tonsil in order to be excreted into the alimentary tract for destruction This explanation means that the tonsil is performing an ordinary lymphatic function together with a special function peculiar to its superficial anatomical position It seems more reasonable that the tonsil should extrude organisms than that it should absorb them

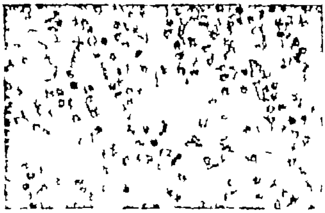

FIG 6.—This section shows the small amount of ink absorbed from a grossly hypertrophied and inflamed human tonsil The throat was profusely sprayed with indian ink three times a day for three days before removal (× 400)

Clinical results confirm this explanation Tonsils were found to diminish in size and to look less angry after sinus infection had been treated Moreover cervical adenitis subsided when nasal infection was removed

TREATMENT OF NASAL CATARRH

If this be the true function of the tonsils it is obviously illogical to remove them for nasal catarrh They should be conserved to perform their function and the cause of their disordered condition should be treated directly Children who suffer from ordinary colds and from other infectious diseases such as scarlet fever, measles and diphtheria suffer from infections of the nasal sinuses as well as general infections of the nasal mucosa. In most cases nature can clear the infection out of the sinus and no further trouble ensues but in a minority infection persists in one or both antra and sometimes in the ethmoids Then there is a varying amount of chronic nasal discharge with recurrent acute attacks Debris and mucopus containing large numbers of active organisms become pent up in the devitalised sinus and a vicious circle is set up because the cilia are incapacitated by the presence of pus and lose their main function Drainage is therefore only possible when the contents have liquefied enough to pass out under the influence of gravity Lipiodol may remain in a normal antrum for a week or two but in a diseased antrum it may stay for months

In mild cases of nasal catarrh it is sufficient to instil 5 to 15 per cent. Argyrol or other antiseptic into the nasal fossæ provided that careful attention is also given to general hygienic measures enhancing resistance. Nutrition seems to be an important factor especially an adequate supply of accessory food factors (Mackay 1034) Simple breathing exercises are useful and there should be sufficient open air and outdoor exercise

In more severe cases the sinuses should be investigated and if infected should be punctured and thoroughly washed out with saline or mild alkaline or boric lotions It is a good plan to introduce argyrol before withdrawing the cannula Most children over the age of five can be treated under local anæsthesia but a short general anæsthetic is required for young or intractable children.

The results of making a false opening into an antrum are extremely bad. The openings usually close in less than three months and if the discharge has not ceased the last state is worse than the first Any part of the lining or wall of the sinus which has been removed in the presence of infection is replaced by scar tissue—a dead area in the field of ciliated epithelium which should be wafting towards the natural opening It is doubtful whether ciliated epithelium ever regenerates perfectly in the presence of infection

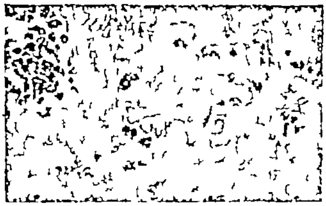

FIG 7 —Section showing ink in tonsil of dog after embedding tonsil in the pharynx and injecting ink into antrum (× 360)

If the tonsils and adenoids are hypertrophied only the adenoids should be removed Large masses of adenoidal tissue interfere with the normal breathing which is an essential factor in drainage of the sinuses Small masses of adenoids should not be removed until the nasal sepsis has been eliminated, for by that time the lymphatic tissue is found very often to have returned to its normal size The tonsils should never be removed because their condition is usually secondary to disease in the nose. Incomplete removal is very often followed by enormous hypertrophy which suggests that a compensating mechanism is at work trying to make up for the loss of the main masses of lymphoid tissue Removal of tonsils and adenoids in the presence of gross nasal infection is fraught with grave danger, particularly to the ears and is likely to aggravate conditions in the nose.

CASE-HISTORIES

CASE 1 —Boy aged 6 who complained of excessive snoring at night constant colds and continuous nasal catarrh for six months He showed enormous enlargement of cervical glands and enlargement of adenoids His complexion was pale and muddy His nose appeared normal on inspection, and his tonsils though small appeared normal also Transillumination showed both antra dull and radiography showed thickening of the right antrum

Exploration —On August 15th 1033 the right antrum was found to contain thick mucopus ; on August 22nd the left antrum was washed out and found to be clear on Sept 10th the right antrum puncture was clear the glandular enlargement had disappeared and the general condition was improved *Bacteriology* —Pus cells and epithelial cells Direct smear : *streptococci ; Gram* positive bacilli staphylococci Culture : Friedländer s bacillus streptococci and *Staphylococcus albus*

Examination on Dec 12th showed no sign of nasal catarrh or abnormal glands. The child had had one mild cold in the interim which had cleared up in three days without leaving any catarrh The adenoids still remained enlarged (by palpation) but did not cause any symptoms

Case 2.—Girl, aged 13, who had suffered from nasal catarrh for nine years and repeated severe colds associated with severe cough. In July, 1933, the tonsils and adenoids were removed for this condition, the nasal catarrh then became worse and the child complained of earache. The right ear suppurated twice and discharged for a fortnight on each occasion. The right nostril showed congestion of inferior turbinate, and there was some thick mucus in the inferior meatus. The right membrane was red and bulging. The tonsillar fossæ were clear, and the adenoids were not visible. Transillumination showed darkness of right antrum, and radiography showed opaque right antrum.

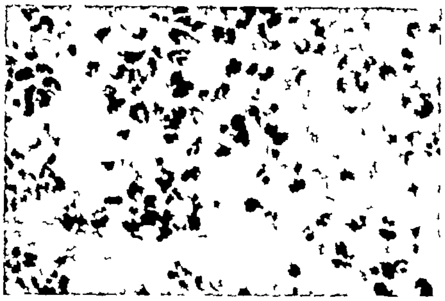

FIG. 8.—Section of upper deep cervical gland that has been injected directly with Indian ink. (× 300.)

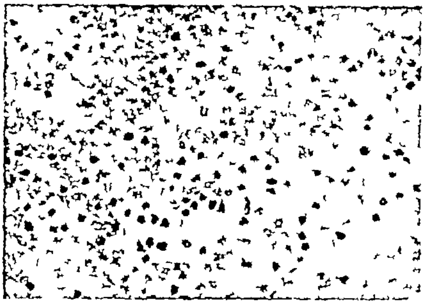

FIG. 9.—Section of tonsil one day after injection of deep cervical gland. (The other tonsil in this dog had been found free of ink when excised one hour after injection of the gland.) (× 300.)

Exploration on Nov. 2nd, 1933, showed the presence of thick viscid mucopus. *Bacteriology*.—Direct film: pus cells; Gram-positive diplococci. On culture: mixed growth of *Staphylococcus albus* and *aureus*.

On Nov. 17th the child was much better and the ear was dry, but the mother considered the child was far from what she should be. The left antrum was then washed out experimentally and found to contain just as much mucopus as the other side, in spite of radiological evidence and the clear result on transillumination. On Dec. 11th the child was normal and the ears dry, and on March 3rd, 1934, *no symptoms were present*.

Case 3.—Boy, aged 13, whose tonsils had been removed eight years previously. The adenoids had been removed twice, for what the mother described as "nothing." Very shortly after the first operation the nose began to discharge, and the child had suffered ever since from nasal catarrh and constant colds, which ended with bronchitis. There were occasional severe headaches. The child had lost a great deal of time from school and was very backward. The left ear had been discharging continuously for two years.

There was nothing to observe in the nose. There was chronic offensive otorrhœa in the left ear. The tonsils had been removed perfectly, and no adenoids were visible. Transillumination showed a slight dimness of both antra, the left being more affected than the right. Both antra were opaque to X rays. *Exploration*.—On Feb. 3rd, 1933, both antra contained thick green mucopus. *Bacteriology*.—Smear: pus cells; Gram-positive bacilli and diplococci. Culture: Hoffmann's bacillus and streptococci.

The antra were washed out in all about twelve times with different lotions, and all types of antiseptic fluid were inserted without any result. Alkaline lotions, argyrol, Protargol, silver nitrate, and lipiodol were tried. In October double intranasal drainage of the antra was performed. The cavities were washed out for three months and at the end of this time there was a considerable nasal discharge. In March, 1934, the condition was better, but the child still had a great deal of catarrh. In July, 1934, the condition of the child was improved, but very obvious nasal catarrh was still present.

Case 4.—Boy, aged 9, who had never been strong since birth, but had been continuously under the doctor's care for four years and had suffered from bronchitis and nasal catarrh since he was six months old. Tonsils and adenoids were removed at the age of 6, since which time the bronchitis and nasal catarrh had become worse. The most distressing feature was the intractable cough, for which he had been attending a tuberculosis clinic for nearly three years. He had frequent headaches. Mucopus was present in both nostrils, but no other abnormalities were noticed. The tonsils and adenoids had been removed completely. Transillumination showed both antra dark, and both were obscure to X rays. *Exploration* on Oct. 7th, 1933, revealed heavy debris in both antra. *Bacteriology*.—Smear: pus cells; Gram-positive diplococci. Culture: streptococci and *Staphylococcus albus*.

Both antra were washed out four times. Six weeks later the mother reported that the cough had disappeared. There had been no headaches, but there was still a great deal of catarrh. This condition continued until June, 1934, when it was decided to make small drainage openings in the antra to facilitate more frequent lavage. A slight improvement, for two months resulted, after which the nasal catarrh returned, but there were no chest symptoms or headaches. Twelve months later the child was still attending the clinic for mild nasal catarrh in spite of intensive treatment and long spells of holidays at the seaside.

Case 5.—Boy, aged 12, who had suffered from headaches, dizziness, slight deafness, and nasal catarrh for four years. He was always ailing. Tonsils and adenoids had been removed five years previously. He was a very pale, pasty, unhealthy looking boy. His throat was normal, except for a small pad of adenoids in the right fossa of Rosenmüller. There was mucopus in both middle meatuses. The turbinates appeared normal, but the right drum was scarred and indrawn. Both antra were dull to transillumination and opaque to X rays. *Exploration* on March 14th revealed the presence of a great deal of heavy debris and some mucopus in both antra. *Bacteriology*.—Smear: a few pus cells; Gram-positive diplococci. Culture: Hoffmann's bacillus, *Staphylococcus albus*.

Both antra were washed out at intervals of one or two weeks. Six weeks later they became perfectly clear. The general condition of the child was markedly improved and nasal catarrh was not present. A fortnight later the child complained of a slight headache. The left antrum was washed out and found to contain a certain amount of pus. One month later the nose was dry and the headaches had gone. The child was told to report later, and twelve months afterwards the mother brought the child to report and remarked that he was now a different being physically, and had shown mental improvement.

Case 6.—Boy, aged 11, whose case was unique in that he had recovered from cerebro-spinal fever. (Organisms found in the cerebro-spinal fluid.) Profuse nasal catarrh had been the dominant feature for about three years or more, and there were no other symptoms. He had had three operations for the removal of tonsils and adenoids, the first being nine years ago. He was a normal looking boy, and the throat was clear of tonsil and adenoid tissue. Adherent to the left middle turbinal was a thick green crust, but apart from this the nose appeared healthy. Both antra were dull to transillumination and opaque to X rays, the signs in the left antrum being evident. *Exploration* on August 15th, 1933, revealed very thick heavy debris in both antra. *Bacteriology*.—Smear: pus cells, epithelial cells, Gram-positive diplococci. Culture: streptococci.

It is interesting to note that the meningococcus was not found, though specially sought. This may be due to the fact that meningococci are soon killed off by streptococci

A week later the antra were washed out and found to contain very much less debris and argyrol 5 per cent. was injected into both antra One month later nasal catarrh had disappeared The right antrum was washed out and found to be clear Six months later no symptoms could be found One antrum was washed out and found to be clear The antra were now absolutely clear on transillumination

CASE 7 —Boy aged 13 who complained of severe nasal discharge and continuous discharge from the right ear for twelve months The case was sent to me for removal of tonsils and submucous resection of septum He was an unhealthy boy snorting somewhat There was considerable deviation of the septum and enormous enlargement and infection of the tonsils with moderate enlargement of the adenoids There was a great deal of pus in the nostrils and congestion of both inferior turbinates It was decided to treat the nasal sepsis as a preliminary before undertaking operations which seemed inevitable Transillumination showed both antra dull and they were opaque to X rays *Exploration* on August 15th showed thick pus in both antra *Bacteriology*—Smear pus cells; Gram positive diplococci and bacilli Culture *Micrococcus catarrhalis* and *Staphylococcus albus*

A week later the catarrh was much improved A month later the ear was dry for the first time for twelve *months There was no nasal catarrh and the nose* appeared to be clear By this time in spite of the deviated septum, breathing was not obstructed The tonsils were by now normal having shrunk to less than half their original size and an operation was not advised Six months later there were no symptoms the nose and tonsils appeared normal and the antra were clear on transillumination and exploration

CASE 8 —Girl aged 4 who had suffered for three years from severe nasal discharge The tonsils and adenoids had been removed two years previously since which time discharge had been worse During the past two years the child had been in a fever hospital five times because *of the discharge for periods* varying between five and eleven weeks The mother complained that the child was extremely delicate Thick green pus was present in both anterior nares and the post nasal space The tonsillar fossæ were clear and no adenoids were visible Both antra were dark to transillumination and opaque to X rays *Exploration* revealed thick pus on both sides *Bacteriology*—Left antrum: pus cells; Friedländer s bacillus diphtheroids Gram positive and negative diplococci Right antrum pus cells diphtheroids Friedländer s bacillus spirochætes; fusiform bacilli One month later left antrum streptococci staphylococci Friedländer s bacillus right antrum streptococci diphtheroids, Friedländer s bacillus Two months later: *left antrum, few streptococci* few staphylococci right antrum few staphylococci few diphtheroids

A month after exploration there was a big improvement in the child s general condition. Two months later reported better for about a fortnight then renewed discharge but less pus Six months later there was still a slight greenish discharge

CASE 9 —Girl aged 7 She had had thick nasal catarrh for one year Her tonsils and adenoids had been removed three years previously for general ill health. Very pale and ill looking child; pus was present in the anterior nares and nasopharynx and the tonsils and adenoids had been completely removed Both antra were dark to transillumination but the right antrum only was dark to X rays. *Exploration* revealed thick pus in both antra. *Bacteriology*—Smear: pus cells; streptococci; Gram negative diplococci Culture *Staphylococcus aureus* streptococci and *Micrococcus catarrhalis*

Three antral punctures (both sides) were given under anæsthetic and six months later the child was free of all symptoms

CASE 10 —Boy aged 6 who complained of nasal discharge for eight months intensified during the last two months. The child was sent for removal of adenoids. Mucopus was present in the left nostril and the tonsils were slightly enlarged and infected The left antrum was opaque both to transillumination and X rays *Exploration* of left antrum Great difficulty was experienced in washing out thick mucopus After clearing the fluid found an easy exit

A fortnight later the mother reported the child to be almost well. Six weeks later the nose had been clear since the last washout and there had been no running at all The tonsils were smaller and appeared to be quite normal. Six months later the child s condition was normal

SUMMARY

(1) The accepted indications for tonsillectomy are open to criticism

(2) Removal *of the tonsils does not necessarily* improve cases of middle ear disease snoring or nasal catarrh.

(3) A study of 5000 children suffering from nasal or throat complaints showed that 385 of them suffered from infection of the accessory nasal sinuses

(4) Sinusitis was commoner in children who had had tonsillectomy than in those whose tonsils were intact.

(5) An experimental study of the lymphatic drainage of the tonsils and sinuses suggests that the function of the tonsils is to receive lymphatic drainage from the sinuses and to excrete bacteria into the throat

(6) Nasal catarrh can often be successfully treated by attention to the sinuses.

(7) In no circumstances should tonsils be removed for nasal catarrh.

I wish to acknowledge my indebtedness to Viscount Dawson of Penn for instigating the whole investigation both clinical and experimental In addition I am deeply indebted to Dr John Beattie and Sir Arthur Keith for directing the research work to Dr John Gray for examining bacteriologically some hundreds of cases to Dr Lindsay Locke for the X ray pictures; and to Mr L Watson and Mr J Coolin for their invaluable *technical help*

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YORK COUNTY HOSPITAL.—There is a steady increase in the attendances at this hospital The number of occupied beds for the past three months was 160 9 as against 161 6 in the same quarter of last year and the out-patient attendances were 28 380 as against 27 581 A small observation ward for children suspected of suffering from infectious diseases is being built at the end of the children s ward

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION —The following all-day courses will be held during October medicine surgery and the specialties Metropolitan Hospital (Oct 4th to 9th); gynæcology Chelsea Hospital for Women (Oct 11th to 23rd); chest diseases Brompton Hospital (Oct 25th to 30th); and urology *St Peter s Hospital (Oct 25th* to Nov 6th) An afternoon course in dermatology will also be given at St John s Hospital (Oct 4th to 30th) Week-end courses will be given as follows cancer at the Royal Cancer Hospital (Oct 16th and 17th) obstetrics at the City of London Maternity Hospital (Oct 23rd and 24th); and infants diseases at the Infants Hospital (Oct 30th and 31st) Courses are open only to members of the fellowship and application for further particulars should be made to the secretary of the fellowship 1 Wimpole-street W 1

THE HISTAMINE-LIKE ACTIVITY OF BLOOD

BY C F CODE, M D Manitoba
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LEECH PROFESSOR OF MATERIA MEDICA, THERAPEUTICS AND PHARMACOLOGY IN THE UNIVERSITY OF MANCHESTER

IN blood there are many substances which have been isolated in pure form and for which chemical methods of estimation have been devised These substances are present in relatively high concentration They are, for the most part, devoid of marked pharmacological activity, and their quantitative estimation is, in many instances, a routine clinical procedure In addition to these presumably *inert* constituents there are, in blood, a number of substances present in minute quantities but possessing exceedingly powerful physiological properties, which may be regarded as the *active* components of blood

The presence of the active constituents may be masked by the manner in which they are held in the blood The changes which occur in blood on clotting (O'Connor 1912), on injuring or hæmolysing the cells (Phemister and Hardy 1927), or even on allowing drawn blood to stand may serve to free these substances in a form in which they can produce their physiological effects Chemical treatment of blood may also liberate active constituents The use of such methods led to the demonstration of a histamine-like substance which may be extracted from blood The separation of histamine from the complex mixture of active components, which under certain circumstances may be found in blood, has marked an advance in our knowledge of the pharmacological properties of blood

Histamine, it may be remembered, has remarkable constrictor effects on plain muscle and dilator effects on the capillaries, and has long attracted attention in connexion with the toxæmia theory of shock

EXTRACTION AND QUANTITATIVE ESTIMATION OF THE HISTAMINE LIKE SUBSTANCE

Following the demonstration of the potent biological properties of histamine (Dale and Laidlaw 1910) various methods were devised for its quantitative estimation No purely chemical method has been found sufficiently sensitive to estimate the small quantities of histamine believed to be present in blood Methods involving a preliminary purification of the active substance, followed by a quantitative assay, by means of one or more of the physiological responses to histamine, have been successfully applied to blood The method recently developed by Barsoum and Gaddum (1935a) has been most widely used It involves the separation of the active substance and its assay on a segment of guinea pig ileum Recently Code (1937a) has subjected the method to analysis, and, upon the basis of estimations in which known amounts of pure histamine were added to water and to blood has developed an improved and simplified technique

It is important to draw attention to the method of expressing the histamine equivalent of blood Various preparations of pure histamine may be used as a standard against which to assay the activity of the blood extracts The histamine base content of all such preparations may be calculated and the expression of results in terms of the base provides a satisfactory constant and allows a ready comparison of data from different sources The quantity of histamine like substance has generally been stated in terms of γ histamine per c cm (1 $\gamma = 0\ 001$ mg)

NORMAL HUMAN BLOOD HISTAMINE EQUIVALENTS

Barsoum and Gaddum (1935a) gave a few figures for normal human blood Haworth and Macdonald (1937) have published figures for 103 university students believed to be healthy The figures range from 0 018 to 0 078 γ per c cm and average 0·04 γ per c cm They suggested the possibility of the existence of two types of "normal"—one averaging 0 03 γ and the other 0 06 γ per c cm Their repeated observations at intervals varying from 5 to 128 days indicated that in a healthy person the blood histamine varies little from time to time

LIBERATION OF HISTAMINE LIKE SUBSTANCE DURING REACTIVE HYPERÆMIA

The experiments of Lewis and Grant (1925–26) indicated that reactive hyperæmia was due to chemical substances accumulated in the limb during the period of obstructed circulation Barsoum and Gaddum (1935b) estimated the histamine equivalent of femoral venous and arterial blood, before and after periods of circulatory arrest, in the hind limbs of anæsthetised dogs Immediately after 10 or 15 minutes' ischæmia, the venous histamine equivalent was approximately four times that of arterial blood The venous blood value then sharply declined and 5–7 minutes after release of the circulation it had returned to the arterial value Continuous reperfusion of defibrinated blood through the hind limb raised the histamine equivalent of the circulating blood several fold Reoxygenation of the blood by lungs placed in the perfusion circuit resulted in a return to the original histamine equivalent When the lungs included in the circuit were made to respire air containing 10–20 per cent of carbon dioxide the whole blood-histamine equivalent again rose The effect of anoxæmia and increased CO_2 tensions on the histamine equivalent of blood entirely removed from the body was, apparently, not investigated

When the whole blood histamine equivalent is increased from any cause it is important to ascertain which portion of the blood contains the increased activity If the active substance be present in the cells it may not be free to produce its physiological effects Barsoum and Smirk (1936a) have studied the concentration of the histamine like substance in the plasma and red cells of venous blood from normal arms and arms in a state of reactive hyperæmia In their ten experiments the histamine equivalent of the plasma was increased from an average value of 0 006 γ per c cm to an average value of 0 025 γ per c cm while the values for the corpuscles showed a comparatively slight increase It is their belief that the liberation of this histamine like substance during circulatory arrest accounts, at least in part, for the *hyperæmia*

PRODUCTION OF HISTAMINE LIKE ACTIVITY BY CONTRACTING MUSCLE

The mechanism involved in the production of the hyperæmia which follows muscular contraction has for years interested investigators Anrep and Barsoum (1935a) have estimated the histamine like substance in arterial and venous blood during contraction of the dog's gastrocnemius muscle A conspicuous increase in the histamine like activity of extracts of the venous blood was associated with muscular contraction, offering a possible explanation of the increased blood flow The histamine equivalents of plasma and red cells during the period of hyperæmia were not recorded It would be interesting to know the effect on the muscle circulation of pure histamine added to the blood in the concentration found during muscular contraction Muscle perfused with a protein free physiological fluid might possibly enable the active substance to be recognised without the necessity of a chemical extraction.

TRAUMATIC SHOCK AND THE HISTAMINE EQUIVALENT OF BLOOD

Many attempts have been made to discount the toxæmia theory of shock and replace it with other explanations because of the difficulty of demonstrating the presence of active substances in the blood in shock (Holt and Macdonald 1934 O Shaughnessy and Slome 1934–35) Further investigations have been stimulated by the development of methods for estimating the blood histamine equivalent

Holt and Macdonald (1936) estimated blood histamine equivalents in cats before and after shock producing trauma to a hind limb Even when the second sample was taken *after shock was fully* established and the animal moribund there was no demonstrable rise in its blood histamine equivalent

Minard (1937) has however compared the histamine contents of the venous blood from traumatised and normal limbs and finds an increase in the blood from the shock producing area which averages 80 per cent of the normal content He agrees that the general level of blood histamine is not raised in acute shock This may be because of the rapidity with which histamine can normally be fixed by the tissues No account of more chronic experiments on traumatic shock has yet appeared and it is hard to say what significance if any must be attributed to the production of histamine like substances in traumatised tissues Recent work on burns however indicates that the toxæmia theory will require further careful investigation and consideration

EFFECT OF CUTANEOUS BURNS ON THE BLOOD HISTAMINE EQUIVALENT

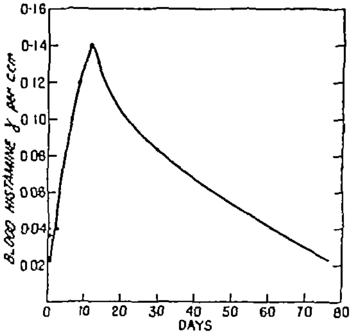
Barsoum and Gaddum (1936) have reported investigations of the blood histamine changes following extensive cutaneous burns Their cases some of which terminated fatally received the usual tannic acid treatment The blood histamine rose to four or more times its normal level on the fourth to the sixth day—the usual time for such patients to develop secondary shock As a rule the blood histamine equivalent slowly settles again to its normal value The conclusion was reached that the rise in blood histamine is not likely to be entirely attributable to production in the burnt skin—it may be secondary to pathological changes in the liver and kidneys

In a woman with severe burns of both legs and buttocks one of us followed up the blood histamine throughout her long illness She had no tannic acid treatment because of severe shock and sepsis, but morphine glucose salines and a blood transfusion On the day after the burn the blood histamine equivalent was 0·037 γ per c.cm This figure rose slowly to 0·14 γ on the twelfth day and then gradually subsided but was not normal till two months later The estimations are plotted on the accompanying Figure and yield a reasonably smooth curve It would clearly be interesting to know whether the active substance is present in the plasma and thus free to produce its physiological effects or fixed in the cells

ASTHMA AND THE HISTAMINE LIKE SUBSTANCE IN BLOOD

The action of histamine on the bronchi has led to its study in connexion with asthma. Haworth and Macdonald (1937) have carried out blood arch in the estimations on a series of 65 card room wor samples have to contend with dusty working condi Headley with a dust which has been shown to conta for help mine Most but not all of these suffered extent from 'stripper's asthma. It surprising therefore to find that their blood equivalent was raised to an average of 0·06 The highest figure found in any of these w 0·12 γ per c.cm —a figure far exceeded other diseases

Unfortunately a series of figures for asthmatics not similarly exposed to a histamine-containing dust has not yet been obtained but in 18 elderly chronic bronchitics the figures found were all within the normal range averaging 0·03 γ per c.cm.



Results of ten duplicate estimations of blood histamine in a patient with severe burns.

SOURCE IN BLOOD OF THE HISTAMINE LIKE SUBSTANCE

Quite apart from additional histamine like activity which may appear in extracts of blood under various physiological and abnormal conditions it is desirable *to have some understanding of the source in normal* blood of the active constituent. The observation that normal blood yields the active substance invites the question in what manner is the activity held in *blood ?*

In their first publication Barsoum and Gaddum (1935a) reported that the histamine equivalent of the cells of rabbit blood was about six times that of the plasma Anrep and Barsoum (1935b) in their investigation of the distribution of the histamine between plasma and red cells found the corpuscle/plasma ratio in rabbit's blood to be well above 10 1 and sometimes as high as 18 1

The distribution of the histamine like substance of human blood has been studied by Barsoum and Smirk (1936a and b) Their data indicate that the concentration of the active substance is about 10–60 times higher in the red cells than in the plasma of normal blood

Recently *Code (1937b)* has studied the source of the active substance in normal blood Throughout the investigation an effort was made to maintain the normal condition of the blood Anoxæmia was avoided and where possible no anticoagulants were used. Pure red cells were sampled from the bottom of the centrifuge tube Under such conditions the plasma and red cells were found to contain little of the histamine like activity When the quantities of histamine like substance estimated to be present in

THE [illegible]a and red cells of 10 c cm of blood were [illegible]gether, only 10–12 per cent of the whole [illegible]ivity had been recovered The only portion [illegible] the centrifuged blood not included in these samples was the layer which separates out between the plasma and red cells containing the white blood cells and platelets ("white cell layer") The activity unaccounted for in the red cells and plasma was found in the white cell layer In man, rabbit, dog, horse, bullock, and goat, 70–100 per cent of the histamine like substance extractable from whole blood was contained in the white cell layer of normal unclotted centrifuged blood

In a more detailed study of rabbit blood, it was observed that clotting liberated the active substance so that it appeared quantitatively in the serum The activity therefore belongs to that group of substances which are freed from cellular constituents of blood on clot formation (O'Connor 1912) Clotting of blood does not in itself form the histamine like substance, since clot formation does not alter the whole blood histamine equivalent Coagulation of blood simply allows the activity to diffuse from the white cell layer into the fluid portion of the blood.

HISTAMINE-LIKE ACTIVITY OF WHITE BLOOD CELLS

A further investigation was undertaken in the hope of determining which of the constituents of the white cell layer gave rise to the histamine like activity (Code 1937c) Early in this study it became evident that valuable information could be obtained from the study of the blood of patients having certain blood dyscrasies Macdonald, who was in close touch with the progress of this investigation, carried out a series of estimations on the blood of such patients The results by Macdonald in Manchester and Code in London are incorporated in Tables I–III The fact that these observations were made quite separately adds considerably to their significance

The observation that when blood clots, the activity is liberated from the white cell layer into the serum, focused attention upon the platelets as the most likely source of the active substance Practically pure platelets were prepared from horse and human blood Extraction of these platelets yielded little or none of the active substance (Code 1937c) It was, therefore, necessary to investigate separately the different types of white blood cells

TABLE I

Histamine Equivalent of the Blood of Patients with Lymphatic Leukœmia

Patient	Total white cell count	Lymphocytes (per cent)	Histamine (γ per c.cm)
R C.	157 000	94	0 021
W J	228,000	98	0 050 0·052
M E	22 300	96	0·031 0·027
H S	31 400	87	0 100
H E	110 000	95	0 086
C B	413 000	99	0 062 0·062

Non granular series of cells—In order to determine the histamine equivalent of lymphocytes, extracts were prepared from lymph glands and from the blood of lymphatic leukæmia patients Extraction of lymph glands yielded no significant amount of the histamine-like activity The blood of lymphatic leukæmia patients was found to give a normal histamine-equivalent value (Table I)

Monocytes were obtained from sterile pleural exudates produced in response to oil placed in the pleural space Extracts of monocytes under these conditions were for practical purposes histamine free

Granular series of cells—If the platelets, lymphocytes, and monocytes do not contain the histamine like activity, the granular series of cells must be rich in the active substance To test the truth of this the blood of patients with myeloid leukæmia was studied. Results obtained by Macdonald and Code demonstrated an enormous increase in the whole blood histamine equivalent of myeloid leukæmia patients (Table II) Values up to 300 times the normal histamine equivalent were encountered.

This increase in blood histamine is not to be attributed, apparently, to the severe anæmia which is usually found in myeloid leukæmia, for in three cases of pernicious anæmia in which the anæmia was similarly advanced (a red cell count of about two millions) the blood histamine equivalents fell within the normal limits (0 06, 0 06, and 0 03 γ per c cm) Further, when the myeloid patient receives X ray therapy, there is a fall in the number of white cells and a fall in the histamine equivalent One would wish to investigate a longer series of these patients at more frequent intervals in the hope of establishing some correlation on these lines

TABLE II

Histamine Equivalent of Blood of Patients with Myeloid Leukæmia

Patient	X ray therapy	Total white cells	Eosinophils (per cent)	Granular (per cent)	Histamine (γ per c.cm)
B	Before After	257,200 74,800	9 8 7·0	97 90	17 5 & 15 2 6 3
H A	Before After	176 800 167,200	2 6 0 5 (10 5)	97 95	3 5 & 2 5 1 8
H	After	95 000	(1 7)	95	1 7 & 1 5
C	After	100 000	?	92	15·0 & 14·0
P	Before	224,000	(3)	99	3 1

Further experiments were then carried out with the aim of gaining some insight into the possible type of cell of the granular series containing the active substance

Extracts of dog blood often contain no significant amount of histamine like activity whereas those obtained from rabbit blood are relatively rich in it (Code 1937b) Histological comparison of smears of dog blood having no activity and rabbit blood rich in the active substance might be expected to indicate some striking difference The cytoplasm of the polymorphonuclear cells of the dog is almost devoid of stained material and relatively few eosinophils are present In contrast to this the polymorphonuclear cells of rabbit blood contain eosinophil granules This is the normal appearance of rabbit blood and the cells have been referred to by hæmatologists as pseudo-eosinophils

With this clue experiments were carried out by Code (1937c) in an effort to produce eosinophilia in dogs Following the repeated oral administration of Nirvanol the eosinophil percentage in the blood rose, and associated with this was an increase in the histamine activity of the blood The appearance of histamine activity in the blood did not exactly parallel the eosinophil count The experiment was indicative but not beyond criticism Results obtained from the blood of patients with an eosinophilia have been more conclusive With one exception a 9 per cent or greater eosinophilia was accompanied by an increase in the whole blood histamine equivalent (Table III)

TABLE III

Histamine Equivalents of the Blood of Patients with Eosinophilia (not Myeloid Leukæmia)

Patient	Disease	Date	Eosinophils (per cent.)	Histamine (γ per c cm.)
P E.	Parasite ?	21/12/36	3000	0·50
		5/1/37	1950	0·14
		23/3/37	2010	0·51
		15/6/37	1260	0·31
W K.	Splenic anæmia after splenectomy	13/1/37	1230	0·10
		2/2/37	980	0·15
C. S	?	12/2/37	900	0·15
		22/2/37	1000	0·14
S E.	Parasite	11/3/37	950	1·00
	Parasite removed	23/3/37	1470	0·15
C. U	Pemphigus	21/4/37	1900	0·04

Again where repeated estimations have been possible it has as a rule been found that in response to treatment the number of eosinophils and the histamine equivalent decrease together (S E in Table III is an apparent exception)

ISOLATION OF HISTAMINE FROM BLOOD

The methods involved in the demonstration of a histamine like constituent of blood were open to two criticisms Firstly it was possible that some or all of the histamine activity was due to a secondary reaction during the rather drastic process of extraction and that histamine was not present as such in blood. Secondly the quantities of histamine present in routine extracts of blood are so small that they allow only pharmacological identification Rigid proof that the active substance was histamine could only be obtained by its chemical isolation

The experiments of Code and Ing (1937) showed that the substance responsible for the histamine like activity was present in the white cells and was not produced by the process of extraction. Without the use of drastic chemical methods they have isolated the active substance in pure crystalline form from the white cells of rabbit s blood and have identified it as histamine Histamine apparently may therefore be regarded as a normal constituent of the white blood-cells

DISCUSSION

Throughout this review we have endeavoured to maintain a tone of restrained interpretation. We feel that this should be rigidly applied to the results just reported. The enormous increase in the histamine equivalent of the blood of myeloid leukæmia patients invites speculation Too little is at present known about the meaning of the histamine like activity of blood to justify the weaving of theories however attractive Experiments so far have shown that almost all the increase in histamine (95 per cent.) in the unclotted blood in myeloid leukæmia is fixed in the white cell layer The fact of the presence in the white cells of this relatively large amount of very active substance is interesting enough, and it seems unlikely that the abnormal content in the circulating blood is without significance.

We are greatly indebted to all who have given us facilities and help in the work here recorded particularly to Dr J F Wilkinson director of clinical research in the Royal Infirmary Manchester and his staff for samples from anæmic patients and to Mr Herbert Broadley of the university department of pharmacy for his help in the preparation of these samples for assay

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PERTUSSIS ENDOTOXIN IN THE TREATMENT OF WHOOPING COUGH

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THE importance of whooping-cough as a cause of infantile mortality and of morbidity during later life is well recognised (Stocks and Kahn 1932) and although the employment of specific vaccines has been attended with considerable success in prophylaxis (Madsen 1925 1933 Sauer 1933) this has been in marked contrast with the failure of vaccine therapy as a whole when once the disease has become established (Thompson 1930 Howell 1930) The last thirty years has yielded many conflicting views on the therapeutic value of pure or mixed pertussis vaccines and in this respect the tolerance of the human body to relatively enormous doses of *Hæmophilus pertussis* together with the use of vaccines prepared from stock strains that the researches of Gardner and Leslie (1931) have since shown to be of little antigenic potency have no doubt been contributory factors. Nevertheless a more recent investigation could produce no evidence that even a freshly prepared vaccine, containing phase I organisms was of any therapeutic value (Begg and Coveney 1936)

Of recent years a number of observers in America have reported striking successes in the prophylaxis and treatment of whooping-cough by the injection of an endotoxin extract of freshly isolated *H pertussis* (Frawley and others 1934, 1935 Munns and Aldrich 1934), and Slesinger (1936) claimed that the intranasal instillation of a similar preparation was also effective in cutting short the disease

These findings have not met with general acceptance (Miller and Singer Brooks 1937) and are open to criticism on the grounds that as most of the cases were treated as out-patients accurate observation of the clinical condition could not have been possible neither do the experiments appear to have been adequately controlled Moreover the absence of fatal cases suggests that in comparison with epidemics in this country the local disease was of a mild character

Krueger who first introduced pertussis endotoxin under the name of pertussis endo-antigen or pertussis

U B.A (undenatured bacterial antigen), stressed the importance of producing a physical disruption of living bacteria in the preparation of his extract, without denaturation of the resulting product by heat, chemical preservatives, or passage through adsorbent filters (Krueger, Nichols, and Frawley 1933) That such a preparation possesses antigenic properties was shown by Teissier and others (1929), and later by Miller (1934), who considered that the unfixed extracellular state of the antigen was the factor responsible

METHOD OF PREPARATION

In view of these reports it was decided to test the therapeutic effect of a similar preparation by means of controlled observations on a series of in patient children suffering from pertussis Working in collaboration with Dr H A Ash at the Southern Group Laboratory (L C C), an endotoxin extract was prepared from freshly isolated *H pertussis* The following technique was employed —

Fresh strains of *H pertussis* were isolated from early cases of whooping cough admitted to the South Eastern Hospital, by the cough plate method, using Kristensen's modification of Bordet-Gengou medium with 20 per cent, and later 50 per cent, fresh horse or rabbit blood Nine to twenty strains were employed and these were confirmed in phase I of Leslie and Gardner by agglutination tests with a high titre rabbit serum They were then grown in 2 5 c cm of blood broth for 24 hours and the resulting growths used to inoculate 30 per cent human blood Bordet medium in 20 oz medical flats A good growth was obtained from these after 24 hours' incubation and this was washed off with 5 c cm of sterile saline, primary subcultures only being utilised The suspension was centrifuged and washed three times with saline and once with distilled water, after which it was well shaken, counted by Brown's opacity tubes, and made up to a strength of 50,000 million organisms per c cm The volume was noted and the suspension again centrifuged, the supernatant fluid being discarded The deposit was then put into an agate ball mill and dried in a desiccator When dry it was ground for four working days (about 36 hours) and then resuspended in saline, the volume being adjusted to the same as it was before centrifuging and drying The suspension was again centrifuged, and the water clear supernatant fluid pipetted off constituted the endotoxin

Injected intraperitoneally into white mice, guinea-pigs, and rabbits in doses of up to 0 5 c cm, it appeared to be inert, but given therapeutically to patients suffering from pertussis the endotoxin elicited fairly constantly a focal reaction with an exacerbation of coughing paroxysms, appearing in between three and six hours after subcutaneous injection

An investigation (to be published later) revealed that the intradermal injection of 0 1 c cm of a one-fifth dilution of this product gave rise to an erythematous reaction, presumably allergic in origin, in a high percentage of children suffering from whooping-cough and also in 85 per cent of individuals giving a past history of this disease Similar reactions could, however, be elicited in approximately 30 per cent of children with no previous history of pertussis, an explanation of which might be found in a process of latent immunisation following repeated contact that doubtless occurs among the child population in an urban community The reactions following comparative skin tests performed with Sauer's vaccine did not support the claim that such reactions are of specific value (Paterson 1935, O'Brien 1937)

For therapeutic purposes the endotoxin was diluted 5 times with a boric buffer solution—i e, the equivalent in endotoxin extract of 10,000 million *H pertussis* per c cm —stronger concentrations than this giving rise to marked local reactions at the site of injection In the absence of marked focal reactions, as evidenced by an increase in frequency and severity of coughing paroxysms, injections were given daily or every second day for 10 to 12 doses Children under one received an initial dose of 0 25 c cm, and in older patients treatment was commenced with 0 5 c cm, the dose being increased daily by 0 5 c cm until a focal reaction was obtained This rarely necessitated larger quantities than 2 or 3 c cm being administered at one time, the total amount given varying from 8 to 30 c cm, though it early became apparent that caution was necessary in the application of this method of treatment to infants, even in the presence of mild initial symptoms

RESULTS

The present investigation concerns observations on 403 children admitted to the South Eastern Hospital during a moderately severe epidemic of whooping-cough in London, the period of observation extending from April, 1936, to April, 1937

There were 31 deaths, yielding a fatality rate of 7 9 per cent, the cause of death in 28 being broncho pneumonia with or without convulsions (11 cases), while 3 developed a terminal marasmus Most of the deaths occurred among children who were admitted suffering from broncho pneumonia in the late stages of whooping cough, and as such cases were not considered suitable for treatment with endotoxin, they have been excluded from the investigation and their mention serves as an index of the severity of the epidemic as a whole Injections of endotoxin were received by 132 children, 8 of whom died, broncho pneumonia being present in 7, convulsions in 2 of these, and 2 others developed a terminal marasmus The remaining 23 deaths occurred among 271 children admitted during the same period of observation, but for the reasons given above the fatality-rates in the two groups are not comparable This does not imply, however, an unequal distribution of the cases as far as severity of the disease was concerned (see Table I), and of the remaining 248 non fatal cases, with the exception of those complicated by broncho pneumonia on admission, every third child admitted in rota received endotoxin irrespective of the stage of the disease when first seen

TABLE I—*Distribution of Cases*

372 cases (*treated*, 124, controls, 248)

Age groups	Mild.		Moderate		Severe		Percentage distribution according to age	
	Tr	Ct	Tr	Ct	Tr	Ct	Tr	Ct.
0–6/12	7	6	1	12	2	3	8	8 4
6/12–1	8	7	8	13	0	2	13	8 9
1–3	30	43	26	51	1	6	46	40
Over 3	15	48	25	55	1	3	33	42 7
Totals and per cent	60 (48 4)	104 (42)	60 (48 4)	131 (53)	4 (3 2)	13 (5)	100	100

Tr = treated Ct = controls

Krueger's endo antigen has been claimed to be equally efficacious when given at all stages of pertussis, but as late cases might be expected to improve without any treatment, no patient towards the end of the investigation was selected for treatment if the disease had progressed into the third week In order, at the same time, to exclude the effect of early hospitalisation in modifying the course of pertussis an equal number of control cases admitted during the first two weeks of the disease was observed for comparison, and records of these are included in the Tables

Most of the patients were given a simple expectorant mixture and the severer cases among the controls received small doses of Luminal The difficulty of evaluating any form of therapy in a disease such as whooping-cough is well recognised more particularly if, as has been stated the malady tends to undergo a natural regression in symptoms after about the 10th–15th day of onset (Faber and Struble 1925 Bamberger and Menke 1935) The problem of a uniform method of observation which has been a drawback to the work published in America, has been to a large extent overcome in the present investigation where all the cases were in patients at a fever hospital, and as they were nursed in open wards of 20 beds were thus equally subject to the same degree of error in attempting an accurate classification of the severity of the disease by numerical recording of coughing paroxysms or whoops Moreover the presence of whooping is not a constant sign in pertussis and the individual temperament of the patient together with such factors as dentition troubles in babies and the psychological effect of example and imitation in an environment conducive to the prolongation of symptoms all tend to complicate the clinical picture These considerations rendered necessary some form of classification of the cases and they were therefore arbitrarily graded into the following three categories —

Mild.—Paroxysms mild up to 10 in 24 hours nursing assistance not necessary slight or no disturbance in general condition sleep or weight   Vomiting slight or absent

Moderate.—Paroxysms more severe requiring occasional nursing assistance up to 15 in 24 hours, vomiting marked, occasional cyanosis and loss of weight

Severe.—Paroxysms distressing over 15 in 24 hours frequent nursing assistance necessary presence of symptoms and signs directly attendant on severe coughing vomiting excessive with loss of weight convulsions &c

Focal reactions are not unknown during vaccine therapy and in a number of early cases treatment with endotoxin resulted in an acceleration in the course of the disease accompanied by an exacerbation in symptoms during the period at which the patient was receiving the antigen (about 10–14 days)   This was not infrequently followed by a rapid subsidence of the cough as though the disease had been cut short In 6 of the younger patients however the treatment was discontinued on account of the appearance of severe focal reactions the subsequent course of the disease remaining unmodified

American observers noted the occurrence of focal reactions which they stated were followed by a temporary alleviation in symptoms in from 2 to 5 hours after injecting their endo antigen and they sought to explain this phenomenon as a process of desensitisation towards pertussis toxin   Bayer (1932) on the other hand found the psychotherapeutic effect of injections of distilled water to be beneficial in whooping-cough, and in order to test this hypothesis and to exclude psychological factors in the production of these reactions a series of 50 control patients was taken 25 of whom received 0 5 c cm of sterile normal saline and the other 25 were given 0 5 c.cm of boric buffer solution daily for 10 days   Among these cases however the characteristic delayed response was not observed neither was the further course of the disease modified in any way

In Table I which does not include deaths cases are classified according to age-distribution and severity of the ensuing attack and it will be seen that presuming the younger the age the worse the prognosis, the distribution favours the control group rather than the treated cases

A general idea of the results of the investigation as a whole can be obtained from the figures set out in Table II which deals with the total length of the disease both before and after admission to hospital.

The accepted average period of cough in pertussis is stated to be 6–8 weeks from the onset and though this is not always the case one cannot exclude the possibility of a prolongation of symptoms dependent on the aggregation of patients   Reference to Table II shows the fallacy of accepting the period of whooping as a reliable index of the duration of the disease 28 of the cases (14 in each group) never whooped at all. Assuming that the active phase of the disease lasts from 6–8 weeks Table II will show that the cases receiving endotoxin cleared up on an average more quickly than the controls, though this effect was not striking A noteworthy feature however was the diminution in the amount of vomiting that occurred among the treated cases

TABLE II

Total Length of Disease, Including Period of Symptoms Present before Admission to Hospital

Period of symptoms	Controls 248		Treated 124	
	Cough and %	Whoop and %	Cough and %	Whoop and %
No whooping		14 (5 6)		14 (11 3)
1 week or less	0	10 (4·0)	0	15 (12 1)
1– 2 weeks	4 (1·6)	13 (5·2)	1 (0 8)	19 (15 3)
2– 3	9 (3·6)	22 (9 0)	14 (11 3)	18 (14 4)
3– 4	26 (10·4)	23 (9 3)	21 (17·0)	12 (9 6)
4– 5	29 (11 8)	35 (14 1)	19 (15 3)	11 (9·0)
5– 6	34 (13 7)	28 (11 3)	26 (21·0)	14 (11 3)
6– 7	30 (15 7)	30 (14 5)	12 (9·6)	3 (2 4)
7– 8	36 (14 5)	25 (10 1)	12 (9 0)	4 (3·2)
8–12	53 (21·4)	38 (15 3)	11 (9·0)	11 (9·0)
Over 12 weeks	18 (7 3)	4 (1·6)	8 (6·4)	3 (2·4)
Totals	248 (100)	248 (100)	124 (100)	124 (100)

DISCUSSION

Treatment with pertussis endotoxin appeared to be of most value when begun in the catarrhal or early paroxysmal stage of the disease, before the onset of whooping   Of 31 cases thus treated, 24 remained mild and 7 became moderate while in 15 the total period of cough including the stage of prodromal catarrh was less than 28 days from the onset   Such cases might have remained mild in any event, but a comparison with the expected course of the disease as it occurred among a similar series of mild control cases admitted in the early stages of pertussis (the details of which are included in Table II) appeared to justify the conclusion that the higher incidence of mild cases among those children receiving endotoxin was something more than fortuitous and that of these 31 cases the course was modified favourably in 24 of them

In a further series of 71 patients treatment was instituted during the first week of whooping the cough in these cases having been already present for from 1–3 weeks   30 of these remained mild   37 became moderate   and 4 developed into severe cases   The incidence of mild cases in this group when compared with the controls suggested that the disease on the whole was uninfluenced by endotoxin treatment, though it was noticeable that among those patients who commenced endotoxin in the earlier paroxysmal stage, modified or abortive attacks followed in about half the cases so treated, 21 of them ceasing to cough for longer than 3–4 weeks

If, however, treatment was delayed until the third week, when the disease was well established, the ensuing attack was unmodified This conclusion was confirmed by observations on a series of 22 patients who had been whooping for 2 weeks or more before admission to hospital, and among whom, in any case, it was not possible to exclude a natural regression in symptoms in the absence of any form of specific treatment

SUMMARY

An attempt has been made to assess the therapeutic value of an endotoxin extract of *H pertussis*, controlled observations being carried out on 372 hospital in patients, 124 of whom received endotoxin injections

A method has been described for the preparation of such an extract from freshly isolated phase I organisms and containing the equivalent in endotoxin extract of 10,000 million *H pertussis* per c cm

It has not been possible to support the claim that endotoxin extract of *H pertussis* is of great benefit in the treatment of whooping cough at all stages of the disease, and this was true more particularly of the average case by the time a clinical diagnosis could be established before admission to hospital There was evidence, however, that if the treatment was begun during the catarrhal or early paroxysmal stage of pertussis before the onset of whooping, this antigen may cut short the attack or modify its course favourably in a high proportion of cases Employed later, this effect was less definite, and once the disease was well established the antigen appeared to be of no value

Pertussis endotoxin is capable of eliciting focal reactions with an exacerbation in symptoms when given to certain subjects suffering from whooping-cough, and though this reaction may be followed by improvement, it constitutes a contra indication to its employment in very young subjects

I am greatly indebted to Dr H A Ash, who prepared the endotoxin at the Southern Group Laboratory, and also to Dr G W Ronaldson, medical superintendent of the South Eastern Hospital, for his advice and helpful criticism

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THE INTERMEDIATE METABOLISM OF CARBOHYDRATES

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CONSIDERABLE advances have recently been made in the analysis of the intermediate metabolism of carbohydrates, and results have been obtained that are of interest not only to the biochemist but also to the clinician From this work, a new conception of the origin of diabetic acidosis has arisen, which has led Korányi and Szent-Györgyi (1937) to suggest a new method of treatment, to which reference has already been made (*Lancet*, July 17th, 1937, p 155, and 24th, p 200) Since the original investigations are scattered over many journals, it may be of interest to summarise recent developments in this field

The perfection of new methods of analysis has been the decisive factor in advancing our knowledge, the essential feature of the new technique being the use of isolated surviving tissues We now know how to keep tissues alive in vitro for considerable periods of time and are thus enabled to study their metabolism under controlled conditions In addition, modern methods of microchemical analysis reduce the amount of tissue necessary for exact experiments to a few milligrammes and so allow large numbers of experiments to be carried out with relative ease The manometric methods of Warburg for the micro determination of gaseous exchange play a prominent part in these methods

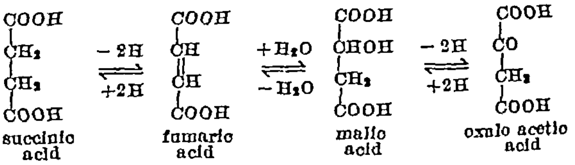
THE CATALYTIC EFFECT OF SUCCINIC ACID AND RELATED SUBSTANCES

Szent-Györgyi reported experiments in 1935 and 1936 that suggested that succinic acid and its derivatives fumaric acid, malic acid, and oxalo acetic acid catalytically promote oxidations in muscle tissue Conclusive proof of this catalytic effect was presented by Stare and Baumann in December, 1936 These workers showed that minute quantities of these substances suffice to bring about an increase in respiration and that the increase is a multiple of the amount of oxygen necessary for the oxidation of the added substance Moreover, the added substance is not used up but can be subsequently detected in the medium There thus remains no doubt that succinic acid and related substances can act as catalysts in respiration

The respiratory quotient of the additional respiration induced by the substances was found to be near 1 0, which indicates that they promote the oxidation of carbohydrates

The close relationship between the four substances mentioned is made clear as follows

REACTION 1



$$\begin{array}{l}COOH\\ |\\ CH_2\\ |\\ CH_2\\ |\\ COOH\end{array} \underset{+2H}{\overset{-2H}{\rightleftharpoons}} \begin{array}{l}COOH\\ |\\ CH\\ \|\\ CH\\ |\\ COOH\end{array} \underset{-H_2O}{\overset{+H_2O}{\rightleftharpoons}} \begin{array}{l}COOH\\ |\\ CHOH\\ |\\ CH_2\\ |\\ COOH\end{array} \underset{+2H}{\overset{-2H}{\rightleftharpoons}} \begin{array}{l}COOH\\ |\\ CO\\ |\\ CH_2\\ |\\ COOH\end{array}$$

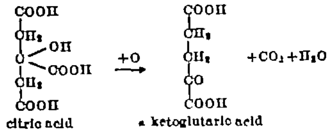
CATALYTIC EFFECT OF CITRIC ACID

The next step was the discovery that citric acid also acts as a catalyst (Krebs and Johnson 1937a) Added to muscle in minute quantities it accelerates the oxidation of carbohydrates in the same way as succinic acid. The experimental analysis of this effect has revealed not only the mechanism of the catalytic action of citric acid but also that of succinic acid and related compounds Furthermore it has led to the elucidation of the main steps in the oxidative breakdown of carbohydrate

FATE OF CITRIC ACID IN THE ANIMAL BODY

Citric acid has long been known to be readily oxidised in living tissues yet the details of its intermediate metabolism remained obscure until March 1937 when Martius and Knoop discovered that α ketoglutaric acid is a product of oxidation of citric acid :

REACTION 2

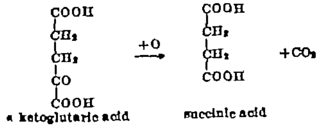


This reaction which was unexpected on general chemical grounds involves no doubt a complicated series of intermediate reactions

We have recently been able (Krebs and Johnson 1937a) to confirm and to supplement the results of Martius and Knoop The method by which it has proved possible to demonstrate Reaction 2 depends on the use of specific poisons or inhibitors In unpoisoned tissue oxidations generally go to completion, so that only end products and no intermediates appear Arsenious oxide is a poison which inactivates specifically the enzymes concerned with the removal of ketonic acids whilst it does not inhibit the oxidation of citric acid A poison of this kind thus makes it possible to isolate intermediate products which do not normally accumulate.

The fate of α ketoglutaric acid in the body is well known. This substance has long been of physiological interest since it arises as an intermediate in the breakdown of glutamic acid of proline and of histidine. It yields on oxidation, succinic acid and carbon dioxide

REACTION 3



Taking Reactions 2 and 3 together we can pass from citric acid to succinic acid, and this reaction can be directly demonstrated if malonic acid is added. This substance specifically inhibits the oxidation of succinic acid, but does not check the breakdown of citric and α ketoglutaric acids and in its presence the conversion of citric acid into succinic acid by respiring muscle is experimentally realised

MECHANISM OF THE CATALYTIC ACTIONS

If a substance acts as a specific catalyst whether in simple chemical reactions or in metabolic processes we must conclude that it takes an active part in some intermediate stages of the process catalysed. It is characteristic of a catalyst that it is used in a primary stage but regenerated in a secondary step and the analysis has to pay attention to the elucidation of the catalytic cycle —viz (*a*) the reaction in which the catalyst is used up (*b*) the reaction in which it is regenerated Szent-Györgyi (1935 1936) suggested the following scheme to explain the catalytic effects of succinic fumaric, and oxalo acetic acids

REACTION 4

oxalo acetic acid + hydrogen of organic molecules ” $\longrightarrow$ succinic acid

REACTION 5

succinic acid + O_2 $\longrightarrow$ oxalo acetic acid + H_2O

The balance-sheet of these two reactions is the oxidation of hydrogen of organic molecules and the catalytic effect is assumed in this scheme, to be due to an alternate oxidation and reduction of the catalyst The nature of the organic radical from which the hydrogen atoms are furnished is not defined in detail by Szent-Györgyi

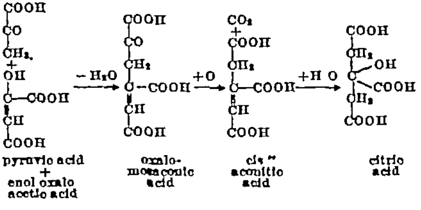
There is no doubt that both Reactions 4 and 5 do in fact take place in respiring muscle and that a certain part of the carbohydrate molecule is oxidised by this mechanism Quantitative experiments however indicate that the rate of Reaction 4 is much too slow to account for the whole catalytic effect The scheme moreover does not explain the significance of Reactions 2 and 3

We must therefore look for a second mechanism in order to explain the catalytic effects fully The presence in tissues of highly active enzymes for Reactions 2 and 3 suggests that citric acid itself may take part in the catalytic cycle Reactions 3 2 and 1 would then be part of the cycle This idea immediately raises the question as to how the cycle would be completed, that is to say whether citric acid can be regenerated from one of its breakdown products.

Experiments show that the postulated reaction does in fact occur If oxalo-acetic acid is added in excess to muscle citric acid is synthesised in large quantities This can best be demonstrated in anaerobic experiments, since the reaction does not require molecular oxygen The removal of citric acid on the other hand is an oxidation by molecular oxygen citric acid thus accumulates anaerobically

The synthesis of citric acid from oxalo-acetic acid is brought about by a condensation with a second substance the chemical nature of which is not yet known. It is certain that the second substance is derived from carbohydrate and very probable that it *is* pyruvic acid The condensation to citric acid can be formulated in the following way (Reaction 6)

REACTION 6

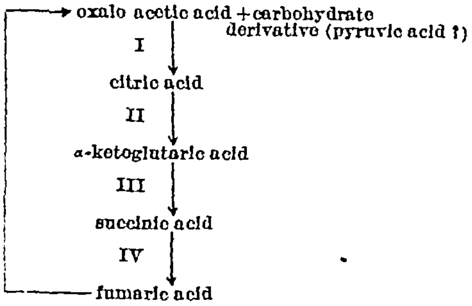


This scheme though supported by experimental evidence is in part hypothetical and one abstains therefore from discussing details but it should be *emphasised that the net effect the synthesis of citric* acid in the presence of oxalo-acetic acid is an experimental fact

The results discussed in this section can be summarised by the following (Reaction 7)

This scheme—the "citric acid cycle"—makes clear the manner in which citric acid and the C_4 dicarboxylic acids act as catalysts The substances undergo alternate formation and decomposition and the net effect of the cycle is the oxidation of carbohydrate

REACTION 7



The relationship between the citric acid cycle and Szent-Györgyi's cycle—represented by Reactions 4 and 5—becomes clear when the following considerations are taken into account Each step of the citric acid cycle is an oxidative process In certain cases the oxidation is brought about more less directly by molecular oxygen, for instance step IV, but in other cases the oxidation is primarily brought about by oxalo acetic and fumaric acids, for instance step I The hydrogen atoms in Reaction 4 are those set free in step I of Reaction 7 and possibly those involved in the conversion of carbohydrate into pyruvic acid—i e, in reactions prior to step I

Reaction 7, while necessarily incomplete, outlines the principal pathway of the oxidative breakdown of carbohydrate in muscle tissue

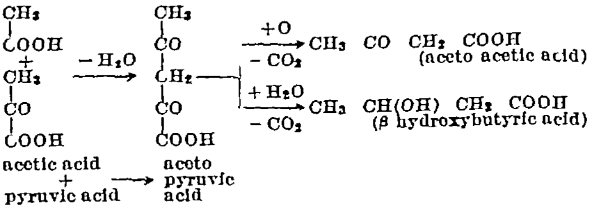
ALTERNATIVE PATHS OF CARBOHYDRATE BREAKDOWN

There is a second pathway which though quantitatively less significant, has a special interest because it results in the formation of ketone bodies The intermediate stage from which the two pathways fork is probably pyruvic acid This substance has long been known to give rise to increased ketone body formation if added to liver in excess (Embden and Oppenheimer 1912) We have recently found (Krebs and Johnson 1937b, 1937c) that this conversion may also take place in other tissues especially in muscle The mechanism of this reaction is probably as follows

REACTION 8

$$\underset{\text{pyruvic acid}}{CH_3\ CO\ COOH} \xrightarrow{+O} \underset{\text{acetic acid}}{CH_3\ COOH} + CO_2$$

REACTION 9



The rate of these reactions is small compared with the rate of the citric acid cycle, but they are of importance for the explanation of diabetic acidosis It is now evident that carbohydrates as well as fats may be the source of ketone bodies

SZENT GYÖRGYI'S THEORY OF DIABETIC ACIDOSIS

Szent Györgyi suggests that the supply of oxalo acetic acid is diminished in diabetes, consequently carbohydrate cannot be oxidised to the normal extent since the catalyst required is not available Pyruvic acid, instead of reacting according to Reaction 7, will therefore follow Reactions 8 and 9, giving rise to an increased ketone body formation By feeding succinic acid, Korányi and Szent Györgyi (1937) claim to have diminished the degree of acidosis in diabetes

There is no direct evidence in favour of this view except its theoretical possibility and the clinical reports in five cases of diabetic acidosis successfully treated by succinic acid Lawrence and his colleagues (1937), on the other hand, report the complete failure of the succinic acid treatment in the two cases which they have treated, and they warn against undue optimism More work, both clinical and experimental, must be carried out before a final decision can be made

According to Reaction 7 citric acid should have the same effects as succinic acid in relieving acidosis, and it would certainly merit clinical trial on the grounds of both greater palatability and cheapness

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EFFECT OF SUCCINIC ACID ON DIABETIC KETOSIS

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THE claim of such well known workers as Korányi and Szent Györgyi[1] that the oral administration of succinic acid has a strikingly beneficial effect on diabetic ketosis has aroused new interest in the therapeutics of diabetes

They describe the effect of such treatment on five cases, in four of which severe ketosis was entirely abolished, without the aid of insulin, by the use of succinic acid alone In their fifth case they claim that the ketosis was greatly reduced, though not entirely removed They consider that the effect produced was due to the action of succinic acid in catalysing the oxidation of pyruvic acid, and invited the confirmation of their observations by other workers Lawrence, McCance, and Archer[2] were unable to corroborate their findings in two severe cases of diabetic ketosis At the end of a week's administration of succinic acid the condition of their patients was so had that insulin had to be given with its usual rapidly beneficial effects They point out that the only real difference between their experimental conditions and those of Korányi and Szent Györgyi lay in the fact that their two patients had not previously had insulin

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[1] Korányi A and Szent Györgyi, A (1937) *Dtsch med Wschr* July 2nd p 1020

[2] Lawrence R D McCance, R A. and Archer N (1937) *Brit med J* July 31st p 214

With the object of testing these claims further we have watched the effect of the administration of succinic acid in three cases under controlled conditions Two of the patients have been observed for five weeks during which time succinic acid was administered for three periods of a week at a time alternating with two intervening periods of a week in which no acid was given

RESULTS OF TREATMENT IN THREE CASES

CASE 1—The first patient was a diabetic woman aged 58 As an out patient she had received a diet of 2300 calories consisting of 100 g carbohydrate 160 g fat and 70 g protein She took fifteen units of insulin in the morning and eight at night She was notoriously inaccurate about her diet and on admission to hospital the urine contained a large quantity of sugar and a moderate quantity of acetone (+ + by Rothera's test) In hospital the urine was tested four times a day for the presence of sugar and acetone and the fasting CO_2-combining power of the blood and the fasting blood-sugar were frequently estimated She continued to receive the same diet as had been prescribed for her as an out patient and for the first day she got the same dose of insulin It was found the next day however that with the stricter dietetic régime in hospital the glycosuria and ketonuria had considerably diminished In order therefore to produce an adequate ketonuria on which to observe the effect of succinic acid the insulin dosage was during the succeeding days reduced to ten units a day At this point all specimens of urine contained considerable quantities of sugar and acetone the fasting blood-sugar concentration was 320 mg per 100 c.cm and the CO_2-combining power of the blood was 54 vols per cent; she was then given 450 c cm of a 2 per cent aqueous solution of succinic acid three times a day—i e a daily dose of 9 g—appropriately flavoured with lemon

Twenty four hours later she felt unwell and was somewhat drowsy The glycosuria and ketonuria had increased the fasting blood-sugar had risen to 360 mg and the CO_2-combining power had fallen to 43 vols per cent In view of the somewhat disturbing nature of her symptoms a further ten units of insulin were given at night The next day she was drowsy nauseated thirsty and unable to take her full diet The fasting blood-sugar and CO_2 combining power remained the same and the glycosuria and ketonuria were unabated On the third day of the succinic acid administration the patient appeared seriously ill and on the verge of diabetic coma she vomited once or twice and was very drowsy Her lips and tongue were exceedingly dry and there was marked polyuria The breath and urine were loaded with acetone and the only food she was able to take was glucose and fruit juice Owing to her somewhat alarming symptoms she was given twelve units of insulin night and morning with a midday dose of ten units; she continued on this dosage for the rest of her stay in hospital On the fourth day of the experiment she was rather better and able to resume her full diet She still felt unwell however and had a considerable glycosuria and ketonuria, the fasting blood sugar remained at a concentration of 360 mg per 100 c cm but the CO_2-combining power had risen somewhat to 48 vols per cent

The succinic acid administration was continued for another three days and then stopped During these days a moderate amount of acetone continued to be passed in all the specimens of urine though in gradually diminishing amounts This improvement however continued uninterruptedly on stopping the acid and the urine became sugar and acetone-free in five more days

It seemed to the observers that the relapse and the recovery of this patient were directly related to the quantity of insulin given, rather than to the succinic acid administration but the experiment was largely invalidated by the rapid onset of alarming symptoms necessitating increased administration of insulin Two of Korányi and Szent Györgyi's patients only began to show improvement after the succinic acid had been administered for three or four days though it is true that the others improved almost as soon as it was given It might therefore be argued in this instance that during the first three days when profound ketonuria was rapidly developing the succinic acid had not had time to act and that improvement did actually occur after the fourth day

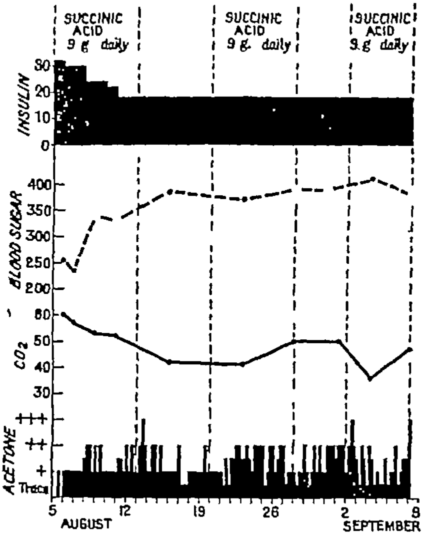

Chart showing effect of administration of succinic acid.

The experiment was however suggestive in that a patient—while receiving full doses of succinic acid—had relapsed to the verge of diabetic coma and it was thus apparent that the drug could not be regarded as a reliable therapeutic weapon in emergency of diabetic coma.

In the light of this experience it was determined for further observations to attempt to produce a milder constant ketosis and to observe the effect on it of periods of a week on and a week off the acid.

CASE 2—The second patient was a diabetic girl aged 15 On a diet of 2072 calories, containing 88 g carbohydrate 160 g. fat and 70 g protein she could be kept sugar and acetone-free with thirty two units of insulin daily This diet was continued in hospital and as before the urine was tested four times a day for sugar and acetone and frequent observations were made on the level of the fasting blood sugar and CO_2-combining power The amount of acetone present in the urine was recorded as a trace a plus or a "plus plus according to the degree of colour produced by Rothera's test this colour was always estimated by the same person The accompanying Figure shows that by reducing the insulin from thirty two to eighteen units a day acetone was produced in fairly constant quantities in all specimens of urine passed. This development did not seem to be retarded by the administration of succinic acid, nor was there any appreciable change in its amount when the succinic acid was withheld It will also be seen that no obvious change in the degree of ketonuria occurred in subsequent test periods on and off the acid The patient was under observation for over a month, and during the first fortnight the CO_2-combining power of the blood steadily fell from 60 to 42 vols per cent irrespective of the administration of succinic acid It thereafter fluctuated between 36 and 50 vols per cent A true, though mild, acidosis was thus produced and it will be seen from the Figure that succinic acid had no obvious effect in restraining this tendency During the course of the month the fasting blood-sugar concentration rose from an initial reading of 260 mg per 100 c cm to readings of about 400 mg

CASE 3 —Similar observations were made on a diabetic girl, aged 17, receiving a diet of 2448 calories, containing 100 g carbohydrate, 192 g fat, and 80 g protein. On ninety units of insulin a day she was kept sugar and acetone free as an out-patient On admission to hospital this dose was reduced to sixty units a day, thereby producing a moderate ketonuria and marked glycosuria in all specimens of urine The ketonuria appeared in spite of the daily administration of 9 g of succinic acid for a week The withdrawal of the acid did not increase the ketonuria On the contrary, during the succeeding week the quantity passed diminished, the acetone being reduced in most specimens from a "plus" to a "strong trace" Such an improvement was, no doubt, due to the more carefully controlled dietetic régime in hospital A further course of 9 g daily of succinic acid had no effect in removing this trace of acetone from the urine The succinic acid was then again stopped for a week and the insulin dosage cut to thirty six units a day, resulting in a slightly increased ketonuria A further week with the same daily dosage of succinic acid failed to effect this ketonuria to any significant extent

CONCLUSION

These results suggest that succinic acid has no effect in preventing the onset of diabetic coma, nor in diminishing a chronic diabetic ketonuria

We are unable to offer any explanation for the discrepancy between our findings and those of Korányi and Szent Györgyi, since the type of case and the experimental conditions seem to have been essentially the same as those of the Hungarian workers

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SUBCUTANEOUS EMPHYSEMA IN DIPHTHERIA

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THE rarity of subcutaneous emphysema in diphtheria, apart from cases in which tracheotomy or intubation has been done, is shown by the fact that Rolleston (1928) was only able to find reference to six examples and had only seen one himself in a period of 27 years It therefore seems desirable to record the clinical details of the following case

CASE REPORT

A boy, aged 9, first took ill on Feb 24th, 1936, complaining of sore throat and malaise During the next three days the throat symptoms increased and toxæmia and prostration became worse Cervical adenitis and periadenitis became so pronounced that he was thought to be suffering from mumps A throat swab taken on Feb 29th was returned positive for Klebs Löffler bacillus on March 1st He was admitted to the Ilford Isolation Hospital on the same day

On admission he was restless and anxious, his general condition poor, thin, pale, slightly cyanosed, and dyspnœic, speech hoarse and whispering, respiratory stridor and frequent irritable unproductive cough suggestive of a large quantity of pharyngeal and laryngeal mucus and membrane, there was no recession Both tonsils moderately enlarged and very œdematous, uvula also very œdematous Thick greyish black membrane covered both tonsils and uvula, extending back on to the pharyngeal walls and forwards over the anterior faucial pillars Profuse purulent nasal discharge Bilateral submaxillary adenitis without any periadenitis Diphtheritic fœtor was well marked

He was given diphtheria antitoxin, 48,000 units intravenously and 48,000 units intramuscularly, 50 per cent glucose solution 20 c cm intravenously, and insulin 5 units subcutaneously An hour after the administration of the intravenous serum he sweated profusely No other symptoms attributable to serum shock were observed In the evening there was a considerable improvement in the patient's condition. He appeared to be more comfortable, the colour was better, and the membrane was commencing to separate from the tonsils and was more defined on the uvula The next day the improvement in the general condition was maintained and the colour was better than the previous night The membrane had separated from the tonsils and was leaving the uvula

THE EMPHYSEMA

The following day at 6 A M the patient became distressed, aphonic, and developed inspiratory difficulty causing intercostal recession and retraction of the abdomen He was at once placed in a steam tent, but little relief was obtained and the symptoms gradually became worse By 10 A.M. he presented the appearance of a severe case of laryngeal diphtheria with a "bull neck," but on closer investigation the "bull neck" was found to be due to subcutaneous emphysema and *not* to cervical periadenitis and adenitis In extent this emphysema involved the *whole of the anterior neck tissues, the submental region,* and a very thin layer of air was encroaching upon the upper chest on both sides back and front While the general condition had deteriorated and cyanosis and pallor were more severe, all membrane had disappeared from the throat with the exception of a large patch on the uvula, but this appeared to be rapidly separating Milk, glucose drinks, and glucose barley sugar were all being taken freely and were well tolerated.

Owing to the urgent dyspnœa and the increasing cyanosis with restlessness and mental anxiety it was deemed expedient to discontinue the steam tent and to begin the administration of continuous oxygen via nasal catheter Thick pads of wool were placed so as to exert constant pressure on either side of the trachea and the head was elevated by pillows to relax the anterior neck muscles in order to minimise the pressure on the trachea and to attempt to prevent the emphysema from collecting in the pretracheal layer of the cervical fascia It appeared that the performance of an anterior mediastinotomy as described by Mason (1936), or alternatively of a low tracheotomy, might be necessary By the afternoon the more urgent symptoms of dyspnœa were abating and the wool and bandages were removed from the neck. The emphysema was now tracking downwards towards the abdomen and upwards over the face, and by the next morning it involved both arms, the thorax, face, and neck, extending to the upper eyelids, and the abdomen especially on the left side The respiratory embarrassment was now much less, the cough not so croupy in character, and the air entry to the chest appeared to be fairly free The throat condition showed a continued improvement, all membrane having gone except a small crumbling patch on the uvula There was, however, abundant purulent pharyngeal secretion The colour was much improved and the pulse regular and of good volume

So far as could be judged, the air leakage appeared to be located in or about the larynx through an opening in which air was being forced into the deep neck tissues by the frequent forcible coughing spasms No definite lesion could be detected in the lungs, although auscultation was rendered extremely difficult and inaccurate by reason of the emphysematous condition of the chest wall which caused numerous adventitious sounds By the next day March 5th the emphysema had extended further and now involved both cheeks and the eyelids on both sides both sides of the neck, the right chest as far as the nipple level the whole of the left chest, both arms and forearms the upper part of the back on the right side the left side of the back as far as the iliac crest and the left side of the abdomen extending downwards beyond Poupart s ligament into the upper part of the left femoral triangle The whole of the skin over this area of subcutaneous emphysema was extremely hyperæsthetic Nevertheless the general condition showed a slight improvement and there was distinctly less toxæmia The colour remained good and the diphtheritic local lesion continued to abate There was by now no œdema of the fauces a little crumbling membrane on the uvula no rhinorrhœa and although the cough was still very persistent the voice was clearer and louder Post-nasal discharge was abundant and purulent So far as could be made out there was no increase or decrease in cardiac dullness liver and splenic dullness were normal and the heart sounds were clear and of normal rhythm. No pneumothorax could be detected air entry appeared to be present throughout the chest

During the next three days there was no increase of symptoms and a daily slight improvement in the general condition was manifest The throat was completely clear and the emphysema whose distribution remained the same was diminishing in quantity as shown by the relaxation of the skin tension. The colour remained good heart sounds were normal and all dyspnœa had gone The voice was still very husky and whispering and deglutition tended to provoke a spasm of coughing but no true regurgitation The administration of oxygen was now discontinued During the next four days improvement was maintained the emphysema became less tense and hyperæsthetic and gradually left the face the voice became louder and clearer and the cough diminished in frequency and severity

PARALYSES

During the next week recovery was marked by signs of mild cardiac paralysis Commencing with occasional irregularity of rhythm the process progressed and gross arrhythmia extrasystoles dropped beats tachycardia and a short sound intermediate between systole and diastole was heard giving an audible impression resembling gallop rhythm With the administration of Cardiazol 0 25 c cm subcutaneously twice daily the cardiac signs abated without causing any noticeable symptoms During this week the cough gradually decreased in severity and the emphysema continued to diminish in quantity and extent By the end of the week it had entirely left the forearms arms, and right chest but remained palpable in the left axilla and adjacent chest the left side of the abdomen and inguinal and femoral regions

In the fifth week of disease the general condition continued to improve the cardiac condition was characterised by very occasional and infrequent arrhythmia, extrasystoles or dropped beats and periods of tachycardia Palatal paresis supervened during this time By the end of the week all the emphysema had gone with the exception of a small area in the left lower abdomen and the left groin The voice was now losing its whispering quality becoming deeper in tone but had assumed a nasal intonation owing to the palatal paresis During the following week the general condition remained satisfactory the residual emphysema vanished and the cardiac irregularity diminished so that the only noticeable abnormalities were very infrequent extrasystoles Towards the end of the week the nasal phonation became much more marked and there was increasing dysphagia and regurgitation

On the *first day of* the next week—i e the seventh week of actual illness—the patient vomited suddenly during the night There did not appear to be any increase in the cardiac signs but the pulse-rate increased and the colour became poor These symptoms occurring in conjunction with the dysphagia and nasal speech presaged the commencement of serious complications so the administration of rectal salines and rectal feeds of pancreatised milk and brandy was instituted Next day it became obvious that pharyngeal paralysis had occurred Mucus in abundance gathered and lay in the back of the pharynx a distressing and frequent cough developed, and deglutition was impossible The foot of the bed was raised and frequent mouth toilet, mopping out the back of the throat and the administration of linctus codeinæ dr ½ every three hours by mouth and atropine sulphate gr 1/100 twice daily hypodermically was ordered to ameliorate the symptoms By the next day a considerable improvement in the symptoms was noticeable The secretion of mucus was much diminished and as a result the cough and pharyngeal discomfort were less During the next four days however the pharyngeal paralysis persisted and it was necessary to increase the dose of atropine to gr 1/100 four times daily So far the main and accessory muscles of respiration had continued to function satisfactorily but now symptoms and signs of paresis became manifest There was a conscious effort in completing inspiration and expiration became forced and accompanied by a definite grunting sound By the next day the difficulty had increased and there was marked dyspnœa with resultant pallor and slight cyanosis Diaphragmatic excursion was extremely poor abdominal respiration was greatly reduced and the chest movements were laboured and deficient The administration of cardiazol was discontinued and the administration of Icoral ♏ 3 of 5 per cent solution in ♏ 12 saline four hourly commenced By the evening of the same day the general condition was very much worse The respiratory paralysis was now well developed and there was intense respiration dyspnœa cyanosis and distress with shallow catchy feeble and unavailing conscious efforts to breathe Pharyngeal mucus accumulated rapidly and copiously the patient became very collapsed with a feeble thready pulse Inquiries had been made regarding a Drinker ' respirator, but as all the available models were in use it was found to be impossible to obtain one At this point the dosage of icoral was increased to ♏ 8 every two hours the atropine being continued as before The patient appeared to be in extremis Next morning the general condition was slightly improved. There was now considerably less dyspnœa chest and abdominal respiration were perceptible and air entry was audible to just below the nipple level anteriorly and there were no adventitious sounds audible in the chest Treatment was continued as before oxygen being given when any cyanosis rendered it necessary By the same evening the improvement was maintained and augmented and the dosage of icoral was reduced to 1·0 c cm of 0 5 per cent solution every two hours During the next four days the patient s condition continued to improve The respiratory paralysis gradually passed off and normal breathing was resumed The pharyngeal paralysis also showed signs of passing off and the collection of mucus in the throat became much less troublesome As this improvement occurred the administration of icoral was gradually reduced to four hourly intervals and the atropine to twice daily

RECOVERY

At the beginning of the ninth week the general condition was fairly good heart sounds showing very infrequent extrasystoles The voice was deeper louder and less nasal palatal movements were freer there was much less dysphagia spluttering and coughing and a marked diminution in the amount of pharyngeal mucus Although diaphragmatic movement was poor and abdominal respiration limited to a slight movement in the epigastrium thoracic respiration was fairly good and air entry free as low as the fifth intercostal space A slight right facial paralysis was present and paræsthesia complained of in both legs.

During the week the general condition continued to improve and the movements of the respiratory muscles gradually returned to normal. The pharyngeal and palatal paresis showed further signs of abatement and the voice deglutition and cardiac function continued their improvement A paresis of the legs and of the right facial muscles persisted By the end of the week it was found possible to cease rectal feeding omit the atropine and reduce the dose of icoral to 1·0 c.cm thrice daily Light diet was well tolerated and fluids were swallowed without provoking cough or regurgitation

By the end of the next week convalescence was well established and all symptoms of muscular paresis and paralysis had disappeared Beyond a weakness of the arm and leg tendon reflexes, the motor and sensory functions of the central nervous system were normal All drug treatment was now discontinued and the patient placed on full diet During the next month the patient was allowed gradually to assume the sitting up position, and finally ambulant treatment with massage to the arms and legs was instituted This stage of convalescence was continued for a further month Two days before discharge from hospital an X ray screening and film examination of the chest were undertaken These investigations failed to discover any pleural or intrapulmonary disease or abnormality which might be the cause or result of the subcutaneous emphysema previously noted In fact both examinations revealed an apparently normal chest condition for a town dweller of this age

He was discharged from hospital on July 22nd, and was allowed to return to school on Sept 7th, and apart from a slight attack of bronchitis in November, lasting, one week, has remained well since

DISCUSSION

In most of the cases recorded by Rolleston the clinical details were rather incomplete, and in the five fatal cases partial or complete post mortem examinations were performed in three instances In none of these was it possible to demonstrate a perforation of the trachea or larynx, but in one case it was found that the cellular tissue of the mediastinum was filled with air, both lungs were emphysematous, and there was interlobar emphysema Recent pneumonia was found in both lungs

Thus it appears that the air may escape by one of three routes either through a diphtheritic perforation of the larynx or trachea , or, as pointed out by Thompson (1936), intrapleurally, through a breach in the visceral pleura and subsequent perforation of the parietal pleura from the pneumothorax so formed , or extrapleurally, in which case the air escapes from the lung along the course of the blood-vessels to the posterior mediastinum, and thence to the superior mediastinum, to appear first in the lower part of the neck This last route was demonstrated by Berkeley and Coffen (1919) at autopsy on several cases of broncho pneumonia At the peripheral lung border they found ruptured emphysematous bullæ, from which "air streaks" led through the vessel sheaths , on squeezing the lung under water with the pleura intact, bubbles of air appeared profusely at the hilum

In the present case it was impossible to discover the point of air leakage, although the first impression gained from clinical observation was that the lesion was situated in the region of the larynx or trachea It will be noted that there was never any loss of cardiac dullness or muffling of the heart sounds, the mediastinum was not displaced, and although adventitious sounds were audible throughout the chest during the emphysematous stage it was impossible to differentiate between râles and emphysematous crackling Certainly no pneumothorax developed, and it will be seen that no indication as to the source of the air was given in the radiological report Owing to the gravity of the general state for the first few weeks it was impossible to undertake a bronchoscope examination of the larynx, trachea, and upper bronchi, and it did not seem that such an examination during convalescence would reveal a small fissure, which, if present during the acute stage, would have been healed weeks before the inspection

Taking all findings into consideration, it appears that the third route of leakage was most probably that which obtained in this case The onset and distribution closely correspond to a comparable case occurring in a tuberculous patient described by Dobbie (1936) At post mortem examination on this case "the mediastinal tissues were ballooned up with air, and this could be traced to the subcutaneous tissues behind the clavicles"

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Clinical and Laboratory Notes

OSTEOMYELITIS OF THE PUBIC BONES AFTER NORMAL LABOUR

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Such is the keenness of clinicians to day, that it is becoming very rare to find any manifestation of the older and more familiar diseases that has not been discovered and described This case is reported because no reference to anything similar could be found in any medical publication during the last two decades, and osteomyelitis of the pubic bones following labour is a condition that one might expect to occur more often

A woman, aged 37, gave birth to her first baby some two years ago after a normal confinement, the child weighing 6 lb The puerperium was uneventful, and she soon returned to her normal occupation as a housewife Within a week of going home a small, rounded, painless swelling was noted just above the pubes It caused no symptoms and was diagnosed by her doctor as a uterine fibroid—and wisely left alone

In due course she became pregnant again and was delivered of an 8 lb baby on June 25th, 1937, after a normal labour On the fourth day of the puerperium her temperature was 104° F when she was admitted to Queen Charlotte s Hospital isolation block as a case of puerperal pyrexia Clinically no serious abnormality was found, the pubic swelling not being differentiated from the large uterus, although some coarseness of the skin above the pubes was noticed

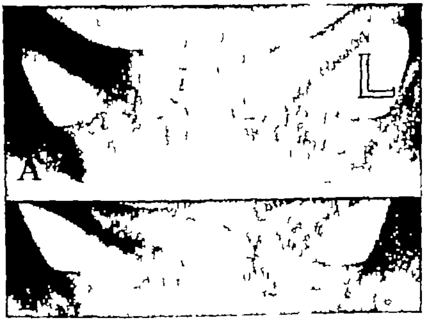
Bacteriologically nothing of importance was grown from the vaginal swab, while cultures of the blood and urine were sterile During the next ten days the uterus involuted normally, but the pyrexia persisted irregularly between 101° and 103° F , until on the fourteenth day it became remittent, reaching 102–3° F each evening At this stage definite œdema of the skin above the pubes was observed, and a hard mass the size of a large orange was palpable, apparently attached to the pubes and distinct from the uterus For the next few days the pyrexia remained remittent, while the mass became larger and slightly tender, and finally became fluctuant

Aspiration with a large bore needle yielded only 5 oz of foul-smelling, thin, yellow pus, and the pyrexia and fluctuation were unaffected Exploration under local anæsthesia revealed a large cavity above, in front of and behind the symphysis pubis, from which some 33 oz of the same type of pus were obtained Digital exploration disclosed complete absence of the symphyseal cartilage and part of the body of the pubis each side, allowing of passage of the finger between the bones, which were freely exposed in the abscess cavity The bones felt rough and shaggy but no sequestra were completely separated A rubber tube drain was sutured into the cavity, and within 24 hours the pyrexia completely sub sided and has not recurred since The wound healed quickly except for a small sinus which continued discharging for some weeks

Radiograms of the pelvis some days later (July 22nd 1937) showed considerable erosion of each pubic bone on the upper and medial aspects and apparent separation of a large sequestrum on each side especially on the right (see Fig A) The rest of the pelvis and vertebral column appeared normal except for sacralisation of the fifth lumbar vertebra on the right side only

Culture of the pus was attempted on many occasions but no bacterial growth could be obtained although in a direct smear some degenerate looking organisms could be seen but not identified

Recovery was uneventful—the swelling gradually subsiding as the discharge decreased throwing the pubic bones into greater relief so that the gap at the symphysis became easily palpable from the outside some weeks later



Radiograms showing osteomyelitis of pubi A four weeks after delivery B three weeks later

Vaginal examination revealed the strong subpubic and interpubic ligaments which latter yielded to firm pressure showing the absence of underlying bone Slight but appreciable movement in a vertical plane could be detected between the pubes as the patient walked which she did without difficulty Radiographic examination repeated some three weeks later showed the sequestra to be smaller but the gap between the bones remained about ¾–1 in wide There was some suggestion of new bone formation (see Fig B)

DISCUSSION

Questions naturally arise as to the type of infecting organism and mode of infection Sterility on culture of the pus suggests tuberculosis but its nature and offensiveness are against that unless secondary infection had occurred No tubercle bacilli could be found and it is a rare site for that organism especially as no lesion could be found elsewhere in the skeleton. Inoculation of a guinea-pig was also negative for tuberculosis It would appear that the condition arose at the first confinement two years ago but remained quiescent until activated by the recent labour As to whether the site of the original lesion was in the soft parts of the birth canal or actually in the bony pelvis, damaged by the pressure of the fœtal head undergoing moulding must ever remain pure speculation. The integrity of the soft parts and ligaments about the symphysis suggests a bony origin. But in either case when one considers the amount of trauma inflicted on the soft parts and perhaps even the bones during delivery especially at difficult instrumental births surely it is rather remarkable that such lesions are not more common.

Another interesting point is the complete lack of disability in walking with a gap in the pelvic girdle about an inch wide The condition is comparable to the after-effects of pubiotomy or symphysiotomy although on a somewhat larger scale and with stronger ligamentous support Also presumably the end result will be much the same—fibrous union

I wish to express my gratitude to Mr Douglas McLeod who suggested publication of this case Also I am indebted to Dr Leonard Colebrook for his advice to Dr R M Fry for carrying out the bacteriological investigations and to the members of the honorary staff of Queen Charlotte s Hospital for their suggestions and criticism

INSULIN SENSITIVITY AND SENSITISATION

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The well known individual variations in the response to insulin injections[2] has been further illustrated by the hypoglycæmic shock treatment of schizophrenia introduced by Sakel[3] One of us has seen a patient given 330 units following a 12-hour fast who developed only a light coma and recovered consciousness spontaneously without sugar while Wilson[4] quotes Palisa as stating that coma has been produced with 18 units of insulin

Increasing sensitivity to insulin following massive dosage has been recorded by Ellis[1] and others and has often been observed during hypoglycæmic shock treatment The following notes of the effects of insulin on a male schizophrenic illustrate an extreme degree of sensitivity and also sensitisation —

The patient aged 24 a hebephrenic with some paranoid features was admitted to hospital on Nov 18th 1936 with a 4-year history of gradually increasing symptoms He was well nourished and without any signs of physical disease

Treatment began on June 21st 1937 increasing doses of insulin being given daily at 7 A.M to the fasting patient by one of us Twenty units caused pallor and profuse sweating and with daily increases to 25 35 and 45 units widespread twitching somnolence periods of intense restlessness and some irregularity of the pulse were added to the clinical picture which was completed at 50 units by the appearance of deep coma with absent corneal reflexes (9 30 A.M) The first neurological changes were the disappearance of superficial skin reflexes and exaggerated tendon reflexes ankle-clonus then developed and rhythmic horizontal rolling of the eyeballs beneath closed lids with loss of the conjunctival reflex. Finally a bilateral spontaneous Babinski showed itself and the corneal reflexes disappeared the pupils later becoming very sluggish in their reaction to light and the Babinski reflex being easily elicited At 11 20 A.M 250 grammes of sugar was given in a nasal tube feed but as the patient was still deeply comatose at 11 50 A.M. intravenous glucose was administered This slow reaction to sugar is interesting in view of the delayed response to glucose shown in his blood-sugar curve and described below

On the following days the dose of insulin was reduced through 48 48 40 3° 30 28 26 24 22 and 20 units deep coma developing with every injection but at 18 units only light coma without loss of corneal reflexes was produced The next day insulin was not given and a sugar tolerance test was done the fasting blood-sugar being 65 mg per 100 c cm and half hourly levels after 50 g of glucose being 65 90 115 95 and 60 mg per 100 c.cm showing a low fasting level, a low normal curve and a delayed response to sugar This delay was confirmed later with another sugar curve which gave a very similar result The blood sugar levels at intervals throughout the day, after feeding, varied between 100 and 140 mg per 100 c cm

Thereafter, deep coma was induced by 19, 18, and 17 units on successive days With 16 units there was profuse sweating, somnolence, and periodic restlessness but no "shock," his coma dose appearing finally settled at 18 units After a few days, however, this dose failed to produce a shock, and thereafter the dose had to be progressively increased Seventeen units produced the 15th shock, but 28 units were needed for the 23rd, 40 for the 30th, 64 for the 37th, and 120 for the 41st

Apart from the case mentioned by Palisa and referred to above, we have not found a record of a hypoglycæmic coma produced in an apparently healthy person with a dose as low as 18 units, and this case of deep coma with 17 units provides a striking example of insulin sensitivity where the usual sugar reactions are not grossly disturbed The 66 per cent reduction in the coma dose, from 50 to 17 units, illustrates the sensitisation to insulin under treatment, while the later rise in the shock dose further complicates any interpretation of the mechanisms involved.

Since writing the above we have noticed a reference to coma produced by 15 units of insulin [5]

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REVIEWS AND NOTICES OF BOOKS

The Endocrines in Obstetrics and Gynecology

By RAPHAEL KURZROK, Ph.D, M D, Associate in Obstetrics and Gynecology, College of Physicians and Surgeons, Columbia University London Baillière, Tindall and Cox 1937 Pp 488 With 178 illustrations 34*s*

IN this book of moderate size Dr Kurzrok has collected the experimental findings and clinical observations on which the science of gynæcological endocrinology and hormone therapy is built It must have been a Herculean task The book is indeed even more comprehensive than its title suggests, for there are chapters dealing with such subjects as embryology, toxæmia of pregnancy, intersexuality, and functional sterility The chemistry of the hormones is discussed in considerable detail and sections are devoted to the adrenal, thyroid, parathyroid, and pancreatic glands Speaking of animal experiment, Dr Kurzrok says

> " the greatest amount of work has been done with the rodent The transference of these results to the human is beset with great danger Broad general principles usually apply from one species to another, but isolated facts rarely do It has been my aim to follow human physiology whenever possible, and to illustrate from animal physiology only when similar observations have not been made on the human "

The clinical section which reflects Dr Kurzrok's wide experience is of special interest, notably the chapters on endometrial hyperplasia and on functional sterility But in this section the details of hormone treatment are not always described with precision Thus, on page 344 is the statement "The bleeding stopped after intensive pregnancy urine extract therapy (Follutein Squibb)" A few lines further on there is reference to the administration of "1 or 2 c c" of a proprietary preparation not generally used in this country The reader is left completely ignorant of the biological activity of this dosage On the same page yet another example occurs "under pregnancy urine extract therapy (600 R U per week) there has been a gradual return to a normal cycle" Was this a gonadotropic or an œstrogenic preparation of pregnancy urine? We should like to have seen included a fuller account of Smith and Engle's work on the difference between the effects of prolan and of true anterior pituitary lobe extract on the ovary of the monkey Fig 81 shows the hyalinisation of the theca interna caused by injections of "Antuitrin S," but there seems to be no description of this important work in the text How does the author correlate this finding with the statements on page 363 that such extracts cause the luteinisation of the follicles? There is a small mistake on page 272 photographs A and B are apparently misplaced Each chapter is followed by an extensive bibliography, which has not been completely verified Stoll is credited with having isolated ergobasine 14 years before this alkaloid was thought of, and the reference given is to a work which has no bearing on the subject Incidentally, a discussion of the alkaloids of ergot seems unnecessary in a book on endocrinology in obstetrics

Dr Kurzrok tends at times to yield to the collector's instinct and to set forth facts and opinions as if they were stamps in an album A more constant effort to provide connecting links and comment would help the reader to sift the material In its absence the book seems more suited to the advanced worker than to the novice The book contains an amazing amount of information, including many unpublished observations by its author, and is lavishly illustrated. The style of writing is clear and concise and there are very few American expressions and mannerisms that will puzzle readers in this country

Recent Advances in Industrial Hygiene and Medicine

By T M LING, B M Oxon, M R C P Lond., Senior Medical Officer, Bristol Police London *J and A Churchill 1937 Pp 212 12s 6d*

WHAT ought we to expect of a book of this kind? There are several more or less independent special aspects of industrial medicine and hygiene industrial toxicology, industrial surgery, accidents, the early care of the injured, rehabilitation, and so forth, industrial physiology and hygiene, which cover physical and physiological environment, and industrial psychology To survey the advances made in all these during the last quarter of the century in a balanced way would be a formidable task if not almost an impossible one It may be said at once that Dr Ling has not covered anything like all the ground and that his perspective is not altogether trustworthy To comment first on the weakest section, that on industrial toxicology, Dioxan and carbon tetrachloride, and a number of other important industrial solvents, are not even mentioned no clear distinction is drawn between the effects of the coal tar "benzenes", and the petroleum benzines A *cylinder of compressed* oxygen is not now used in resuscitation after CO poisoning (p 180) In the field of hygiene and physiology no reference is made to the important work of the late J S Haldane on anoxæmia and the effects of alterations in the atmospheric pressures on certain types of workers Although Diver's Neurosis is mentioned nothing is said about the methods of decompression or about the effects of altitude upon airmen

Industrial surgery is much more adequately discussed. Little of practical importance to industrial medical officers is omitted, excepting the advances in the practical control of industrial sepsis Perhaps the most valuable part of this book is Dr Ling's constant insistence upon the importance of the psychological and temperamental state of the worker in the ætiology of sickness and of accident, and we regret only that more space could not be allotted to the development of the social psychology of industry Some of the chapters will be of great service to medical officers already in industry or contemplating this career Up to-date information will be found on the examination, interviewing and selection of industrial workers the organisation and conduct of a works medical service the psychological factors in accident production and prevention (accident proneness traumatic neurosis and the various neuroses of industry) modern principles of industrial ventilation, air-conditioning and lighting and the early diagnosis and control of industrial lead poisoning A division of this huge subject into a series of ' Recent Advances monographs would seem to be the only way of enabling any author to cover the ground. In the meantime we are grateful for what is here collected

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Epidemiologie Grundbegriffe und Ergebnisse

By Prof. Dr Med. ADOLF GOTTSTEIN Ministerial Direktor i R Berlin Leipzig and Vienna Franz Deuticke 1937 Pp 285 M 15

THE author of this book—who had won an honourable place in the ranks of epidemiologists when a majority of the workers of to-day were at school or at an even earlier stage of progress—has set out in twenty lectures the results of his study and experience —not with the object of compiling a text book, but rather in the hope of inculcating a general philosophy Prof. Gottstein for whom the connotation of epidemiology is the same as that of most modern writers—viz. the study of disease as a mass phenomenon—steadily enforces the doctrine that both historical knowledge and if not mathematical training, at least a thorough grasp of the principles of mathematical reasoning are disciplines essential in the training of an epidemiologist In the earlier lectures he calls attention to the need of carefully distinguishing between what is true of the individual and what may be generalised to cover the group and to the danger of confusing what *may* happen with what *does* happen. The analogy he draws on pp 121–5 between the epidemiological point of view in relation to the individual biological point of view and what has been called the statistical method of modern physics in relation to individual physical results, is especially worthy of consideration.

The earlier part of the book is largely concerned with the problems of immunity and the immediate phenomena of outbreaks of disease In the second part Prof Gottstein deals with the more general questions of factors that influence the secular trend of mortality both general and specific such questions as the influence of economic and cultural changes and the importance of selection. In the last lecture he discusses the attitude of great poets to the problems of disease and draws the conclusion—which might be taken for the text of his whole sermon—that the fact that men of the greatest genius have in this subject clearly displayed the limitations of the ages in which they lived, should be a lesson to the average man that it is not by efforts of poetic genius but by the patient study of natural science that truth is revealed. If Prof. Gottstein's younger countrymen will carefully study and take to heart his work—particularly perhaps his castigation of some attempts to glorify the racial effects of selection—its educational value will be great An English reader will probably have some difficulties with the language which is sometimes rather heavy going for a foreigner He will also perhaps think that the statistical treatment is sometimes unsatisfactory—what is obvious too much enforced and what is not obvious too little explained—and that too many Germans are given credit for results or conclusions that have long been part of the stock of common knowledge But a didactic writer naturally keeps in view the predilections of his audience Indeed it is possible that the English reader will find some solace in the reflection that such subjects as the analysis of periodicity in disease or the statistical measurement of the relation between environmental factors and mortality have been much more closely studied by such men as Hamer Brownlee Farr and Stevenson—to name only the dead—than by any of the Germans cited

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A Dictionary of Dental Science and Art

By W A DUNNING D.D.S Professor of Dentistry School of Dental and Oral Surgery Columbia University and S ELLSWORTH DAVENPORT Jun D.M.D formerly Associate Editor *Journal of the Allied Dental Societies* London J and A. Churchill. Pp 635 28s

THIS dictionary exemplifies the sad tendency of mankind to coin unnecessary words. Many of those here defined we have never before seen in print and we cannot imagine what misguided ingenuity led to their invention oscitation, for instance, as the equivalent of yawning or pytsma for saliva. Dentistry like medicine, has accumulated a dreadful jargon, some of it defensible on the grounds that it provides convenient shorthand for the initiated. But much of it has neither precision nor euphony Since such words exist it is doubtless desirable that the student should be enabled to ascertain what they mean and this book provides a useful guide If it should also stimulate him to use simple language wherever possible and not lose himself in a maze of uncouth technical terms, it will serve a second not less useful purpose

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The Technic of Local Anesthesia

Sixth edition. By ARTHUR E HERTZLER, A.M. M.D Ph.D LL.D F.A C.S., Professor of Surgery in the University of Kansas London: Henry Kimpton 1937 Pp 284. 21s

Prof. Hertzler's book wears well and remains a reliable guide to the practice of local analgesia There must be few books better fitted for the practitioner or young surgeon to have beside him during his early adventures into the domain of operations done with local analgesia. No attempt is made to discuss the reasons which should influence the choice between general or local anæsthesia for any particular operation, and Prof Hertzler is clearly no blind advocate of the procedure that he himself favours Young children, for example, he regards for the most part as unsuitable subjects and he is fully alive to the sort of mental characteristics in adults that may exclude the use of any anæsthetic that does not involve unconsciousness In fact he recommends the administration of sedatives, or narcotics, or both, before most major operations, Amytal, gr 4 on the evening before and gr 3 an hour before operation, being his own choice He gives morphia gr ¼ one hour before smaller operations Prof Hertzler uses tablets of novocain for making up the solution just before use and finds no necessity for boiling these He has repeatedly tested the tablets, and the adrenaline which is added to the solution, in the bacteriological laboratory and never found any pathogenic bacterium

Measuring Intelligence

A Guide to the Administration of the New Revised Stanford Binet Tests of Intelligence By LEWIS M TERMAN, *Professor of Psychology, Stanford University*, and MAUD A MERRILL, Associate Professor of Psychology in the University London Harrap and Co 1937 Pp 461 10*s* 6*d*

THE Terman revision of the original Binet scale of intelligence tests, first issued 21 years ago, has long been popular in this country among intelligence testers and in particular among medical officers called upon to certify mental defectives Time has revealed certain flaws most noticeable at the extreme ends of the age range For the last ten years, therefore, Prof Terman, with the coöperation of Prof Merrill, has been engaged in the preparation of a further revision, the results of which are embodied in this book Two complete scales instead of one are now provided, including tests for every half year from 2 to 5, then yearly tests up to 14, with additional tests also for the "average" and the "superior" adult - Binet, were he alive, might well have difficulty in recognising these scales as revisions of his own There are at least 25 tests of a type not included even in Terman's first revision and a large number of these, especially for the younger ages, involve the use of objects, beads, blocks, and pictures, thus fostering interest and meeting the criticism of the old scale that it depended too much on the use and understanding of words It will be observed also that some of the old tests have had their age assessment altered either up or down by a year

Much care has obviously been taken in the selection of tests and in trials of their applicability, as also in obtaining a representative sample of the white child population of the United States between 2 and 18 years of age Detailed instructions are given on how to put each test to the child and how to mark his responses , and a ready reckoner enables the examiner to obtain the I Q easily from any paired values of chronological age and mental age Since the new scale contains 129 tests as compared with 90 in the previous edition, its application will take longer although only a few of the tests need be given in any individual case An abridged form is suggested by the authors containing four instead of six tests for each year or half year and these will probably suffice for preliminary survey

The development in recent years of tests of performance, tests for special aptitudes, educational tests, and even tests of temperament have coincided with a tendency on the part of some psychologists to scorn Binet's idea Clearly an I Q does not express more than a limited aspect of the personality, but the wise examiner can form from observation of the attitudes and demeanour of the subject under examination a shrewd judgment of capacity and potentiality in so far as these depend upon general intelligence This new scale may have to be modified for English children, but even in its original form the Terman revision was used with success in this country, and there is no reason to anticipate any more difficulty with the tests as revised

British Journal of Children's Diseases

THE following papers appear in the July-September issue, Vol XXXIV

Dr Christopher Rolleston, in his capacity of venereal diseases officer to the county councils of the Soke of Peterborough and Rutland, contributes a paper on Congenital Syphilis in Small Towns and Rural Districts It is based on a study of 50 cases collected during the last twelve years from a population composed of 70,000 in the areas containing the clinics and of another 30,000 who use them Of the series 32 were males and 18 females The ages ranged from 10 weeks to 45 years, but only 6 were under 5 In 31 cases (62 per cent) one or both parents showed evidence of syphilis and in 3 more it was highly probable In 48 cases the parents gave a positive Wassermann reaction in the blood Eye lesions, the commonest found, were present in 31 cases in the form of interstitial keratitis (24 cases), choroido retinitis (5), and optic atrophy (2) As regards treatment, in babies intramuscular injections of Sulfarsenol combined with mercurial injections were used After the age of a year bismuth took the place of mercury, and subsequently intravenous replaced intramuscular injections, Neokharsivan and Stabilarsan being substituted for sulfarsenol As a rule the treatment was well borne Rolleston recommends that the treatment should be continued until the Wassermann reaction is negative and in every case for three or four years In 40 cases definite improvement took place, in 5 there was no change, and 5 became worse In interstitial keratitis excellent results were obtained by prolonged treatment with arsenic and bismuth, but in choroido retinitis and cerebro spinal syphilis the results were poor In conclusion Rolleston says that blood examination should become part of the routine work of the school medical, infant and maternal welfare, and tuberculosis services, and declares that congenital syphilitics can easily be treated at home

In his article on Obesity following Chorea, Dr P R Evans, who records two cases in girls aged 10 and 13, states that the condition is probably not rare, and refers to other examples recorded by Moncrieff, Coburn, and Gamna The fat is deposited, as in idiopathic obesity and Fröhlich's syndrome, over the abdomen and pelvis, shoulders, cheeks, and proximal segments of the limbs As there is a natural tendency to regression during adolescence, most cases need no treatment, and administration of thyroid and hard exercises are best avoided

Dr J D Rolleston records a case of Generalised Vaccinia. The patient was a male infant, aged 7 months, in whom the lesions though generalised were sparse, especially on the face and trunk, the limbs being chiefly involved No special treatment was needed Apart from a severe attack of gastro-enteritis recovery was uneventful Generalised vaccinia, of which Rolleston had never seen a previous case, is a rare event and with a few exceptions is exclusively found in young children. The prognosis as a rule is good, and the condition is only likely to be severe when it supervenes on a pre-existing *dermatosis*, especially eczema

The abstracts from current literature are devoted to dermatology and syphilis

Copies of the Annual Review of Biochemistry which was noticed in our issue of Sept 11th (p 635) may be obtained in this country from Messrs H K Lewis and Co , Gower-street, London, for 22s 6d (postage extra)

THE LANCET

LONDON SATURDAY SEPTEMBER 25 1937

NASAL SINUSITIS IN CHILDREN

It is increasingly recognised that infected nasal sinuses rather than infected tonsils and adenoids, may be responsible for the intractable catarrhs of nose or upper respiratory tract so often seen in childhood. A few months ago we referred[1] to an investigation at Great Ormond street in which Mr James Crooks found pus or mucus in one or both antra of 24 out of 100 children undergoing tonsillectomy.[2] This suggested that in a quarter of the cases the seat of the trouble may have been wrongly located and that treatment of the sinuses might have been more profitable than removal of adenoids and tonsils. The same moral may be drawn from the work that Mr Ivor Griffiths records in our present issue. He comes to the conclusion that removal of the tonsils, and presumably adenoids, does not necessarily improve cases of middle-ear disease, snoring or nasal catarrh, and he found infection of nasal sinuses in as many as 380 out of 5000 children suffering from nose or throat complaint. He also found that sinusitis was commoner in children who had had tonsillectomy than in those who had not, but this may well have been because such children had catarrhal symptoms for which the operation was mistakenly performed rather than because absence of tonsils predisposes to sinusitis.

A remarkable feature of the ten cases Mr Griffiths describes in detail is that it was only necessary to wash out the sinuses a few times to remove the infection; indeed four of the ten children seem to have recovered after the affected antrum or antra had been washed out once. This weakens his argument against making an artificial opening into the antrum because such openings usually close in less than three months, for if most cases are cured by washing out a few times it is to be expected that others will be cured by irrigation within this period. More intractable discharge is probably due to infection of other sinuses. Dr Herman B Marks[3] says that intranasal opening followed by irrigation is their regular method of treatment at the Boston Floating Hospital; he lays emphasis both on prevention and treatment on adequate nutrition and a diet rich in vitamins. The treatment of these cases is certainly not yet stereotyped. Mr Griffiths advocates instillation of Argyrol while Dr Marks condemns the use of drops especially in young children because of the danger of their aspiration into the alveoli of the lungs and because they interfere with ciliary action.

That tonsillitis may be a sequel to nasal sinusitis is well known. Mr Griffiths propounds the interesting theory that a function of the tonsil is to excrete into the pharynx organisms that pass into it from the sinuses through the lymphatics, from which it would follow that the tonsils should never be removed for nasal catarrh. He describes experiments he has made with dogs and cats on the passage of dyes and indian ink from the sinuses, in which he discovered the material constantly in the deep cervical and submaxillary glands and (in small amount and by no means always) in the tonsil. He holds that the dye passes into the tonsil by the lymphatics, either directly or through the deep cervical glands, although no afferent lymphatics to the tonsil can be demonstrated. In one animal he sutured the pillars over the tonsil to exclude the possibility of the dye passing from the pharynx on to the tonsillar surface, yet it duly appeared in the tonsil. On the other hand, many observers have seen the ciliary current conveying material from the nose and sinuses along the side of the pharynx, and Dr Marks describes a branch of this current trickling over the surface of the tonsil to rejoin the main stream lower down. It is hard to believe that the tonsil does not sometimes become infected from the nose in this way.

Knowledge of the prevalence of sinusitis should mean that nasal catarrh in children will be less often treated by removal of tonsils and adenoids, performed as a routine. But children's catarrh is not always due to sinusitis and it may be recalled that only 24 of Mr Crooks's 100 tonsillectomy cases had secretion in the antra. Nasal and respiratory catarrh can undoubtedly be caused by infected tonsils and adenoids, especially the latter, and cured by their removal. We must take care therefore lest the pendulum swing too far.

A NEW COLLEGE OF PHYSICIANS

A project to establish an Australasian College of Physicians has now been realised. It has been planned to some extent on the pattern of the Royal College of Physicians of London but this pattern has been adapted to the needs of a community whose professional schools and leaders are scattered sparsely through a huge continent where means of communication are not yet fully developed. One difference will be in the method of election of its council and of its president. In the Australasian college the proportion of fellows from each State to sit on the council will be arranged in advance so as to make its governing body geographically balanced. The president will be elected by the council and not as in London by a general vote of all the fellows, and the members of the college will have representation on the council. [illegible] fundamental difference [illegible] of [illegible] examination [illegible] be contemplated, [illegible] college will have [illegible] standing Foundation fellows will include all those recognised as teachers of medicine by the medical faculties of the universities of Australia and of New Zealand The college will absorb the Association of Physicians of Australasia (including New Zealand) whose members will become foundation fellows The college will hereafter assume responsibility for carrying on the work of the Association, including the organisation of an annual meeting at different centres at which scientific communications are submitted

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[1] Lancet, [illegible]

[2] Arch. Dis. Childh. [illegible]

[3] New Engl. J. Med. [illegible]

In making these plans, the new college has taken full advantage of information put at its disposal by the Royal College of Physicians of London, who last winter appointed Sir Edmund Spriggs as an emissary, charged to convey information and messages of goodwill His visit to Australia was followed by one to this country from Sir Charles Blackburn (Sydney), Dr S V Sewell (Melbourne), Dr L S Latham (Melbourne), Dr A W Holmes à Court (Sydney), and Dr E B Gunson (Auckland), who conferred with Lord Dawson of Penn and other colleagues at Pall Mall East Apart from the promotion of research in clinical medicine and the dissemination of knowledge, the Australasian College will, it is hoped, serve as a meeting point for physicians and provide opportunities for discussion and common action when legislative or other measures affecting the national health arise We are glad to believe that, with its elder sister, the Royal Australasian College of Surgeons, the new college will serve to strengthen the social as well as the purely professional ties between those working for better health in different parts of our Commonwealth of Nations

The first president of the college is Sir Charles Blackburn, hon consulting physician to the Royal Prince Alfred Hospital, Sydney, and dean of the faculty of medicine in the University from 1932 to 1935, and the vice-president Dr S V Sewell, hon physician to the Melbourne Hospital and lecturer in clinical medicine in the University

INTERNAL PNEUMOLYSIS

It is one of the axioms of collapse therapy that an ineffective pneumothorax should either be made effective or abandoned The direct section of adhesions by endoscopy or their indirect relaxation by phrenic paralysis can no longer be dismissed as operations only occasionally required in artificial pneumothorax treatment, they are coming to be regarded as an essential part of collapse therapy, for too often the induction of a pneumothorax fails to secure collapse of the diseased area and merely provides a space in which the endoscopist can work A partial pneumothorax may thus be only the first stage of the internal pneumolysis which must be performed before complete collapse of diseased lung can be secured The risks attending internal pneumolysis are not great, but were they more serious than they are, they would still be less than those of the untreated disease It is surely justifiable to take risks when life is at stake, and the patient's life is endangered so long as a vomica remains patent Endoscopic section of adhesions is now becoming the rule when in the course of artificial pneumothorax treatment a radiogram shows an uncollapsed cavity, and even when, though a cavity is not detected, the continued expectoration of bacilli proves that lung ulceration is still responsible for an "open" lesion

Since internal pneumolysis imposes a nervous strain upon the patient and is not devoid of risk, even in the hands of a prudent and skilful operator, it has been customary not to interfere with adhesions unless persistent cavitation could be proved or surmised Further experience has modified this conservative attitude Dr F G Chandler has published detailed records[1] of 210 consecutive operations performed on 157 patients, with an account of their subsequent fate They are divided into two series the first of 110 operations performed on 89 patients between 1929 and 1934, and the second of 100 operations performed on 68 patients between 1934 and 1936 Of the first series of 89 patients 47 (52 8 per cent) are reported up to the end of 1936 as being in good health with a negative sputum, 11 (12 3 per cent) in fair health, while 15 (16 8 per cent) are dead, 7 patients are untraced In the second series of 68 patients 46 (67 6 per cent) are in good health with a negative sputum and a further 11 (16 1 per cent) in fair health Only 1 patient in the second series has died and none is untraced The second group of patients have, of course, not been long under observation and some of those "in fair health" will become sputum negative, on the other hand, the mortality-rate of the group will, perhaps, show a slight rise The incidence of empyema, whether tuberculous, pyogenic, or mixed, was 7 in the first series and only 1 in the second A fair deduction from these figures is that the operation as performed by Dr Chandler to day is far more successful than when he began to divide adhesions seven years ago, and he is now one of many who are obtaining excellent results from operations of this kind Among the interesting points of technique is the discard in the second series of diathermy as a cutting current Hæmorrhage, sufficiently serious to be recorded, occurred 16 times in the first series, diathermy having been used alone in 8 of these cases In the second series, diathermy was never used as a cutting current and hæmorrhage is only reported once, even then being not sufficiently profuse to give rise to a hæmothorax The 8 cases in which hæmorrhage followed the use of diathermy alone all developed effusions immediately after operation Dr Chandler observes justly that diathermy is no more likely to excite an effusion per se than the electrocautery, but blood in the pleural space leads to effusion and diathermy used as a cutter is a potential cause of hæmorrhage Now that the "dull red glow" of the electrocautery, without previous diathermy, is being used more and more to provide both coagulation and section there is no increase either of hæmorrhage or of immediate effusions

The object of artificial pneumothorax is to secure rest for a diseased area of lung A lung adherent to the chest wall must be disturbed by thoracic movement, and because adhesions usually form over diseased areas in the lung the result of respiratory movement is concentrated just where it will cause most damage Endoscopy shows that a partially collapsed lung drags on an adhesion as an anchored boat tugs at its rope A caseous area in the proximity of the proximal end of an adhesion, especially if it is of the cord type must be kept in constant agitation by respiratory movements The healthy areas of the lung are collapsed and resting the diseased area is only partially collapsed and is in constant movement It is for these reasons that we welcome a less conservative attitude in these cases Endoscopic *inspection* at any rate is painless and free from risk. When a radiogram shows adhesions the lung should be inspected and adhesions should be cut if this can be done without much risk especially if they are under tension whether a cavity is demonstrable or not If there is no evidence of cavitation and adhesion, and section is likely to be a hazardous procedure either from the size or the situation of the bands it is best to leave them alone The presence of an open cavity which has persisted for some months justifies taking the risk of section unless this risk is deemed greater than that of the disease Operative risk it may be noted depends to some extent on the experience of the operator The beginner should remember that discretion is the better part of endoscopic surgery It should not be forgotten moreover that the tension of adhesions may often be overcome with negligible risk and minimal suffering to the patient by phrenic evulsion or crush provided that the diseased lung is anchored by adhesions at apex and base The value of this simple operation in suitable cases is often under-estimated because in the past it has been misapplied

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[1] *Tubercle* April 1937 p 298 and May, 1937 p 348

REMEDIES FOR WHOOPING COUGH

ALTHOUGH some still share RICH's belief[1] that the underlying cause of whooping cough is a filtrable virus the bacillus of Bordet-Gengou (*Hæmophilus pertussis*) is now widely accepted as the agent solely responsible And whereas again RICH attributes the characteristic cough to irritation by these bacilli entangled in the cilia of the tracheal mucous membrane most authorities put it down to the action of expiratory stimuli on nerve endings sensitised by an endoneurotoxin However this may be the assessment of the clinical severity of an attack of whooping cough (as such) is commonly based upon the frequency and character of the paroxysms In making any comparison of the value of the various forms of treatment it is necessary of course as SAUER[2] says to take into account the variability of the untreated disease both in severity and duration and he rightly adds that when the remedy is given by injection one must not forget the psychological effect on child parent nurse and physician Too much has sometimes been made of the response of older children to the hypodermic needle but a good deal can be said for a suggestion RIETSCHEL once made that whooping cough remedies should be assessed on the results obtained with those under two years of age

Stock vaccines are now considered valueless in the treatment of this disease and so far there has been no satisfactory evidence that even vaccines freshly prepared from organisms in the correct antigenic phase and injected in large doses have much effect—unless, as BEGG and COVENEY[3] remark, it is an undesirable one A variant much recommended is the use of pertussis endoantigen or endotoxin prepared by methods like that described by Dr A. R. THOMPSON on p 733 In treating his patients THOMPSON employed the equivalent in endotoxin extract of 10 000 million *H pertussis* per c cm and injected daily or every second day a total of 10–12 doses Except for infants for whom it was halved the initial dose was 0 5 c cm. increased each day by the same amount until a focal reaction as shown by an increase in the frequency and severity of the paroxysms was observed. Seeing that it is infants that are most in danger from whooping cough it is unfortunate that THOMPSON has to report that with very young patients special caution proved necessary even in the presence of mild initial symptoms Nevertheless he thinks that pertussis endotoxin may be of some value if injected in the catarrhal or early paroxysmal stage but where treatment was delayed until the first week of whooping the disease on the whole appeared to be uninfluenced Reports on the specific therapy of whooping cough are so often uncritical that THOMPSON's cautious conclusions are refreshing but JARISCH,[4] discussing vaccine treatment yet again will not even grant its possible value in the early stages He maintains that specific prophylaxis and therapy have both proved useless and in this he will find many supporters though SAUER[2] is still able to give encouraging accounts of immunisation in Illinois

A newer and entirely different approach to whooping-cough starts from the discovery that children with this infection (and many others) are not fully saturated with vitamin C ORMEROD and his colleagues[5] who acknowledge the priority of OTANI[6] have now treated 27 cases with ascorbic acid and are impressed by the rapid clinical improvement that seems to follow They quote OTANI as saying that ascorbic acid antagonises pertussis toxin and this belief is supported by the cognate observation made by various workers that the acid inactivates diphtheria toxin in vitro KLIGLER and his associates[7] have come to the conclusion that it does so by an oxidation reduction reaction and in their opinion the course of diphtheria might well be influenced by the concentration of this vitamin in the body The same might equally well be true of whooping cough

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[1] Rich A. R B H Johns Hopk. Hosp 1932 51 346
[2] Sauer L. J Amer med. Ass. August 14th, 1937 p 487
[3] Begg N D and Coveney M F Lancet 1936 i 8
[4] Jarisch R Wien klin Wschr Sept. 3rd, 1937 p 1 56
[5] Ormerod M. J Unkauf, B M and White F D Canad med Ass J September, 1937 p 68
[6] Otani T Klin Wschr 1936 15 1881
[7] Kligler I J, Leibowitz L. and Berman M J Path Bact September 1937 p 415

ANNOTATIONS

DRUGS LIMITATION

THE Supervisory Body set up under the Drugs Limitation Convention of 1931, at its recent meeting in Geneva, reviewed the progress made during the five years of its existence Its operations have established an entirely new system of international law and its experience may serve as a precedent in other directions of international activity The number of states that have ratified the Limitation Convention now stands at 62—a number higher than that hitherto recorded of any conventions concluded under the auspices of the League of Nations This system of international control of the manufacture and distribution of dangerous narcotic drugs is based upon estimates furnished in advance by Governments of their respective requirements for the ensuing year Failing the supply of such estimates it devolves upon the Supervisory Body to frame them It also revises excessive estimates and requires explanations from Governments where necessary A comparison between the estimates made in advance and the statistics of the actual manufacture and consumption of drugs no longer shows the considerable discrepancies that were apparent in 1933 and 1934 The number of countries for which the Supervisory Body has been obliged itself to frame estimates has fallen from 23 in 1933 to 9 in 1936 The number of countries and territories that sent in estimates this year was 140 compared with 97 furnished to the first session of the Supervisory Body in 1933

DENTISTRY AND DYSPEPSIA

HITHERTO the association of diseases of the mouth with those of the stomach has mostly been a matter of clinical observation and deduction in individual cases Statistical studies in this field are nearly all of recent date, and a useful addition to them has now been made by Dr S Lossius [1] of Oslo In charge of the dental department of the Ullevaal Hospital, he has since 1933 coöperated with the other departments to which patients suffering from gastric disorders have been admitted Up to the beginning of 1936 the team work done by the various hospital departments has concerned 328 patients, the diagnoses being gastric or duodenal ulcer in 161, gastritis in 50, and dyspepsia (indeterminate) in 117 All these underwent a thorough dental overhaul and only some 10 per cent could be considered as orally and dentally sound The 328 patients included 171 whose oral and dental condition was found to be quite deplorable in various respects, and 157 who passed muster A control group of 328 patients in hospital for diseases other than those of the stomach also went through the dental department, and only 80 of these were held to be in an orally deplorable state Here then was statistical evidence suggesting a relationship between diseases of the mouth and stomach A classification of the 328 dyspeptics according to the frequency with which the members of the three groups suffered from disease of the mouth and teeth showed that the ulcer and gastritis groups contained the highest percentage of oral offenders, while in the indeterminate group only 47 of 117 patients showed serious disease of the mouth and teeth Yet another comparison was made by addressing inquiries to the patients after their discharge from hospital, and ascertaining how they had fared according as they had or had not accepted treatment of the mouth and teeth in hospital It was found that 21 per cent of the orally untreated had required renewed treatment in hospital for their gastric disease, whereas this was the case with only 10 per cent of the patients submitting to measures of dental and oral hygiene While only 17 per cent of the patients refusing oral treatment were found to be symptom-free, 30 per cent of those who had submitted to skilled dental hygiene had no further complaints Though Dr Lossius is conscious of the smallness of his figures, he thinks he has made out a case for systematic coöperation in hospital practice between dentists and physicians in charge of cases of disease of the stomach

DIAGNOSIS OF TRICHINOSIS IN THE LIVING

THE prevalence of trichinosis in the United States, to which we recently called attention,[1] has been emphasised by D L Augustine,[2] who points out that the examination of diaphragms at necropsies in Boston has shown an incidence of 27 6 per cent Commenting on the diagnosis of this infection in the living Augustine notes that in the local typhoid epidemic of 1924–25, twenty of the suspects turned out to have active trichinosis, and he reports his findings in 75 patients thus infected Larvæ were never obtained from the peripheral blood in man but were isolated occasionally from that of animals experimentally infected though they have rarely been seen in the cerebro-spinal fluid by anyone, and in the course of many examinations of the stools of trichinous man, pig, and guinea-pig, adult worms were never found by Augustine He therefore looks on all these laboratory aids to diagnosis as in general a waste of time Similarly he has been led to regard biopsy with microscopic examination of the bit of excised muscle as quite unreliable, for though he examined over 80 pieces of muscle from an infected guinea pig, without finding a measle, larvæ were displayed after gastric digestion of its ground up muscles Antigen from larvæ, freed from muscle in this way, dried, ground and infused in Coca's fluid, was made the basis of precipitation and skin tests which gave much better results in his hands With this antigen, used in a strength of 1 in 100, precipitins were sometimes found to be present as early as the second week, always from the fourth week onwards, they persisted for the year during which the patients were followed up Augustine states that they may be simulated in the blood of those to whom certain drugs have been given—notably, quinine and arsenic Positive precipitin tests are of special value in the diagnosis of any acute illness if they appear only during its course In the skin tests the antigen must be as weak as 1 in 10,000 if reactions in the uninfected are to be avoided The character of the reaction alters as the illness runs on, during the first week it is a delayed one, pronounced after 24 hours and positive while there are still no precipitins, but after this date it is immediate Apart from the persons who have a general sensitivity to foreign protein (and they have no precipitin reaction to trichinella antigen) it is apparently specific, for it was present in 59 of 60 persons examined, the exception being moribund, and it has not been found in those infected with the zoologically related trichuris, but in view of its persistence and the number of persons in the United States at least who have become infected its presence does not necessarily brand an acute illness as trichinosis. In determining this point Augustine lays particular stress on an eosinophilia shown by a series of examinations to have set in during the second week of illness though even eosinophilia as in hookworm infection may be absent if the illness is grave and particularly if there is a secondary infection. He insists that diagnosis is a tedious affair and may be made only after the medical attendant has weighed a careful history and the results of a complete physical examination against those aids which the laboratory can give him

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[1] *Nord med Tidskr* July 31st, 1937 p 1214

[1] *Lancet*, Sept 4th 1937 p 685

[2] *New Eng J Med* 1937, 216, 463

LATE RESULTS OF TUBERCULOUS LYMPHADENITIS IN CHILDHOOD

RADIOSCOPY and bronchoscopy are continually throwing new light on chest conditions that formerly left the clinician doubtful—largely because physical signs were variable and recovery happily prevented post-mortem examination One of these is the so-called epituberculosis which some attribute to collapse of the lung while others regard it as a localised consolidation of unusual type [1] That recovery from such a condition is possible even if there is a miliary spread has lately been shown by Fish [2] Now Brock Cann and Dickinson [3] bring forward studies of enlargement of mediastinal glands in childhood which lead them to conclude that collapse is the more common cause of epituberculosis On bronchoscopy the carina shows a characteristic widening by the enlarged glands This widening of the carina necessitates approximation of the bronchial walls and sometimes obliteration of the opening Collapse of different lobes may follow A case is described in which a primary focus of tuberculosis in the right lung narrowed the left main bronchus by glands of the inferior tracheobronchial group sufficiently to bring about complete atelectasis of the left lung This was confirmed at autopsy In another child with clinical and radiological signs of lung collapse on the left side a bronchogram with iodised oil showed a stricture of the left main bronchus with dilatation behind it Bronchoscopy confirmed the narrowing of the bronchus. In yet another case where there was a collapsed lower right base material aspirated at bronchoscopy was found to contain tubercle bacilli and a solid piece of granulation tissue large enough for biopsy which was coughed up through the bronchoscope proved to be a fragment of lymphatic gland occupied by a follicular caseating tuberculosis After the bronchoscopy the air entry in the lower lobe began to improve six days later it was normal, and with subsequent clinical improvement the area representing the caseous gland was replaced in the radiogram by a calcified shadow Brock and his colleagues conclude that epituberculosis may often be due to simple atelectasis from pressure of enlarged caseous bronchial glands and that a fibrous stricture may give rise to secondary bronchiectasis. The child with tuberculous mediastinal lymphadenitis must be kept under observation till he grows up

This study resembles one by Rossle [4] who thought atelectasis the probable cause of the radiographic appearance and observed that if air re-entered the collapsed lung the shadows disappeared Some of his cases which developed tuberculous bronchitis through invasion of the bronchus by caseating glands were progressive but some others, in which the obstruction was caused by a catarrhal pneumonia, ended in recovery

PREVENTION OF NEUROSYPHILIS

SINCE the establishment of a special centre at Horton (L C C) Hospital some 800 cases of general paralysis of the insane have been treated there and a valuable analysis of the results has now been made by Dr W D Nicol the medical superintendent, and Dr E L Hutton.[1] It appears that comparatively few of the patients had had antisyphilitic treatment in the primary or secondary stages of the disease A history of primary infection is less often given by women than by men, and a relatively larger proportion of women seek advice for the first time when they already have advanced neurosyphilis The reasons for which patients then seek advice are tabes tabes with optic atrophy somatic lesions occasionally paralysis or other meningovascular signs and mental symptoms which can only be regarded as the precursors of G.P I itself Of 81 cases coming under notice in the late stages only 13 could be regarded as truly latent and asymptomatic, and these were discovered in the course of routine examination or because some other member of the family was found to have syphilis. In many of these cases treatment was pursued until the patient developed G.P I but in only two men and two women was pentavalent arsenic given in the shape of Tryparsamide and all four were tabetics in the preparetic stage

Nicol and Hutton emphasise the importance of examining the cerebro spinal fluid (C S.F) wherever the serum gives a positive reaction In the cases under review very few spinal fluids had been examined, and there was no record of a lumbar puncture having been done unless the patient showed mental or neurological signs and symptoms The conversion of a positive serum Wassermann to a negative one is no guarantee against the invasion of the central nervous system by spirochætes and the present series includes some 30 cases in which the serum was negative but the C S F strongly positive—indicating that the nervous system was already involved. Among malaria-treated cases that had relapsed mentally after a good remission, it was found that the C S.F remained positive, and it appears that the persistence of positive reactions in the spinal fluid of a patient who is mentally well is a strong reason for a second course of malaria therapy

Investigations into family histories gave some unexpected but illuminating results Among 320 men about whom inquiries were made 51 were single and in a further 99 cases it was impossible to obtain adequate information Of the remaining 170 patients 89 had families whose members gave negative serum reactions, while in a further 18 there was reason to assume that the wives and children were free from syphilis On the other hand, in the remaining 63 cases there was evidence of the disease in one or more members of the family Nicol and Hutton find that syphilis is usually acquired by men when they are still young—as a rule probably before the age of 25—and that the patient remains infectious for a period of two or three years after the primary infection Accordingly men who married before 25 or within two years of acquiring the disease almost always infected their wives and one or more of their offspring, and it is noteworthy that an extremely high proportion of women and children so infected suffered from neurosyphilis and not from the somatic manifestations of the disease

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[1] Cameron, H. C. and De Navasquez S. *Guy's Hosp Rep* 1936 86 366.

[2] Fish R. H. *Arch. Dis Childh.* 1937 12 1

[3] Brock R. C., Cann, R. J and Dickinson J R. *Guy's Hosp. Rep.* 1937 87 295

[4] Rossle R. *Virchows Arch.* 1935 296 1

[1] *Brit J ven. Dis* July, 1937 p 141

The results of malaria therapy in G P I and tabo paresis are regarded as disappointing, but solely because the majority of patients are not treated until too late In a series of about 400 it appeared that 189 might have been diagnosed as potential cases of G P I several years before the onset of paretic symptoms, 134 of them had had antispecific treatment at various periods and 55 had relatives under going treatment One source of delay would be overcome if the routine examination of the C S F was recognised as being as important as the blood test in every patient who has contracted syphilis, and Nicol and Hutton point out that with the Dattner needle lumbar puncture can now be undertaken in an out patient clinic in such a way as to be no more painful than a venepuncture and little more likely to have unpleasant sequelæ The discovery of positive findings in the C S F should be followed by appropriate therapeutic measures—pyretotherapy or pentavalent arsenic—the aim of the treatment being to restore the C S F findings to normal Such comparatively simple measures would, it is believed, substantially reduce the number of sufferers from neurosyphilis

CARDIAC ASTHMA AND PULMONARY ŒDEMA

CARDIAC asthma is now generally put down to acute left ventricular failure, and acute pulmonary œdema is often regarded as the same condition but more severe On the basis that heart failure means that an increased diastolic length of the cardiac fibres is required for the performance of a given amount of work, cardiac asthma should be compatible with an increase in systolic blood pressure and pulse rate—just as there may be systemic congestion without reduction of the minute volume of the circulation, and, in fact, a decrease in the minute-volume as the signs of systemic congestion clear up When the left ventricle fails to adapt its output, even very temporarily, to the volume of blood reaching it through the pulmonary vein, the lungs become congested and this alters their properties, increasing rigidity and reducing vital capacity, the afferent nerves of the lung are stimulated and increased ventilation and dyspnœa follow According to Budelmann [1] there is at the same time an increase in the intrapleural pressure In patients with cardiac asthma he found the vital capacity lower in the evening than in the morning—a finding related to the evening dyspnœa of some types of cardiac failure The increase in blood pressure that occurs towards the end of the day is perhaps one explanation of this In considering treatment Budelmann mentions all the usual remedies for cardiac asthma, including morphia, venesection, nitrites, and (between the attacks) fluid restriction, digitalis, and diuretics like Euphyllin When there are chronic lung changes such as bronchitis and emphysema, morphia may have to be given with care Budelmann believes that if venesection is done it should be copious and recommends the withdrawal of 700–1000 c cm blood, he has found the vital capacity to rise by 600 c cm after a venesection of 700 c cm Pleural effusion is seldom present with these symptoms, but when it is, the fluid should be withdrawn cautiously Adrenaline should not be used for paroxysmal cardiac dyspnœa and Budelmann has shown that with the increase of arterial and venous pressure that it produces there is a simultaneous reduction of the vital capacity Similarly the group of drugs called for in shock—e g, camphor, Coramine, and caffeine—are not to be advised Their stimulant action on the respiratory centre and on the peripheral vessels increases the venous return, which is the reverse of what is wanted

PROGNOSIS OF RHEUMATOID ARTHRITIS IN CHILDREN

A STUDY of the fate of children attacked by the rheumatoid type of arthritis is of topical interest in view of the recent suggestion, based on agglutination tests, that the same virus is responsible for this disease as for acute rheumatic fever [1] One of the difficulties in accepting the association is that serious sequelæ to which the victims of either disease are liable tend to affect different systems of the body In acute rheumatism the prognosis depends solely on the cardiac lesions, in rheumatoid arthritis on the damage to the mechanical efficiency of the joints T Colver [2] has been able to trace 49 out of the 69 patients with rheumatoid arthritis admitted to the wards of the Hospital for Sick Children, Great Ormond street, since the war He finds the highest incidence was in the pre-school period (before the peak for rheumatic fever) and that the case mortality rate approaches 30 per cent in these younger children, and is almost nil in those first attacked in the second half of childhood In these fatal cases death occurs during the first three years of activity of the disease, which seems to be self limited to an average duration of five years About one patient in four recovers completely, and the prognosis is best when the disease becomes quiescent within three years Gross crippling is uncommon in the survivors traced, most of whom are capable of earning a livelihood, none of them showed any evidence of valvular heart disease but on the other hand two of those that died and one of the survivors suffered from an adherent pericardium

MALARIA IN MALAYA

SOME idea of the havoc wrought by malaria in the Federated Malay States may be gained from the fact that in 1936 no less than 27,000 cases were admitted to the Government and estate hospitals, besides which many thousands were treated at home or remained untreated In the last three years the mortality among the hospital patients has fallen from 3 0 to 2 2 per cent, but the case incidence in the States remains at a seriously high level, and big efforts are being made to find means of reducing it [3] Last year the Institute of Medical Research investigated the curative effects of Atebrin musonate, the soluble methyl sulphonate of atebrin, and found that febrile symptoms ceased and asexual parasites disappeared from the peripheral blood more rapidly in patients receiving this drug than in controls treated with atebrin or with quinine In 2 of the first 200 cases, however, fits occurred after the third injection of 0 3 g of atebrin musonate, and, though both patients quickly recovered, such incidents are disconcerting and make the drug unsuitable for indiscriminate use Experiments are also continuing on chemoprophylaxis on the estates The population of two highly malarious estates were divided into three groups A B and C of which A got 0 2 g of atebrin on two consecutive days of each week B got 0 4 g of a quinine salt daily and C got no treatment at all In the next six months the incidence of clinical malaria at all ages was reduced to a low level in group A whereas in group B although there was a reduction among the stable adult population the disease was still common in children and new adult arrivals New arrivals posted to this quinine group usually developed clinical malaria after 2–6 weeks residence despite the daily administration of quinine whereas no such primary attack was seen in the atebrin group After 12 months working it could be said that attacks of malaria ceased almost entirely within a fortnight of the commencement of treatment with atebrin and that quinine although ultimately it was almost as efficacious took longer to produce its effect The untreated control group showed a high incidence of malaria throughout It was hoped that after 12 months treatment the groups A and B would have become sterilised from parasites but this was evidently not so for malaria recurred in them as soon as the drugs had been eliminated from the system Thus chemical prophylaxis though very efficient, proved useful only while in use

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[1] Budelmann G *Dtsch med Wschr* July 16th 1937 p 1105

[1] Eagles G H *Lancet* August 21st 1937, p 421

[2] *Arch Dis Childh* 1937 12, 253

[3] Report of Malaria Advisory Board for 1936 By A Neave Kingsbury Kuala Lumpur Federated Malay States Government Press 1937 Pp 17 2s 4d

PLACENTAL INFECTION IN INDUCED LABOUR

The impression is widely held that the surgical induction of labour is virtually without risk to mother or baby and may therefore be undertaken without serious consideration Many obstetricians suspect that the dangers of this procedure are grossly under estimated Confirmation of this view comes from Penfield and Butler who by the bacteriological examination of the placentæ of women whose labour had been induced by means of the rectal tube have shown that infection by *B coli* is common and is associated with a high rate of fœtal and neonatal death[1] They have now continued this work[2] examining 114 placentæ, of which 40 were derived from patients whose labour had been induced by the insertion of a tube They discovered placental infection in much greater proportion among the induction cases than among those whose labour was not induced the actual numbers being respectively 28 and 16 Even more striking was the difference in the type of infections in the two groups. Of the 28 infections in the induced group 13 were with *B coli* and 4 with *B welchii* The infections in the control cases were mostly with *S albus* or with diphtheroid bacilli and in no case with *B coli* or *B welchii* The likelihood of infection apparently varies directly with the time that elapses between the performance of the induction and the onset of labour In 15—i.e about a third—of the infections in induced cases the child did not survive and bacteriological examination of the fœtal blood showed in every case the same organism as was obtained from the corresponding placenta. This work seems to be of great importance When the causes of stillbirth and neonatal death are under consideration the rather vague heading of placental causes is too often used to cover a collection of fatalities which are not clearly explained and no infection but syphilis is mentioned The suggestion that infection is more to be feared when surgical induction fails for some time to stimulate the onset of labour is also one that demands attention because if confirmed it may influence obstetric technique It has often been observed that an unduly prolonged first stage of labour is likely to be followed by a still birth even though the actual delivery is unassisted It may well be that placental infection is one of the causes of fœtal death in such cases. Apart from this possibility Penfield and Butler have anyhow provided another weapon for those who deplore as dangerous the modern tendency to induce labour for supposed post-maturity

ADSORBENT ENEMATA IN ULCERATIVE COLITIS

It is a very ancient discovery that the siliceous earths have powerful adsorptive properties that make them valuable not only in taking the potter s glaze when baked but also as cleaners and decolorisers The best known kaolin or china clay has been used in the East for centuries in the effective treatment of Asiatic cholera Its action is apparently twofold first, it encloses large numbers of the bacteria and carries them off secondly it adsorbs the bacterial toxins—in diphtheria, for example it has been found useful as an application to the fauces. Kaolin in a fluid suspension tends to settle out and form a tenacious mass decreasing the surface area available for adsorption Aluminium hydroxide has somewhat similar properties but besides being an astringent it has a greater colloidal activity forming a light viscid gel and settling out of suspension less readily It has been shown to adsorb hog cholera virus and staphylococcal phage Its value as an addition to kaolin is therefore apparent and Smith[1] has described in our pages the action of such a mixture —20 per cent kaolin and 2 5 per cent alumina— in removing *Bacterium coli* and other organisms almost entirely from a fæcal suspension, though it is doubtful whether this in itself has any therapeutic value These powerful adsorbents almost certainly cannot discriminate between bacterial toxins and enzymes mucus foodstuffs and vitamins how far they may interfere with the essential functions of the bowel is still unknown Impressed however by the adsorptive power of the kaolin-alumina mixture Eyerly and Breuhaus[2] have applied these substances to the treatment of ulcerative colitis To avoid the dispersion when given by the mouth, they have administered the mixture per rectum to be retained for some time The first step is to cleanse the colon with a pint of warm water In an hour this is followed by a retention enema consisting of 3–5 oz of the mixture of kaolin and aluminium hydroxide in the same amount of warm distilled water The patient is instructed to retain this for as long as there is no discomfort Usually one retention a day is enough but occasionally two are given Opium is given in the early stages if there is pain or excessive diarrhœa The diet is of a non irritating type with a high calorie and vitamin content Six cases of severe ulcerative colitis were relieved by this treatment The authors are aware of the possible toxicity of aluminium preparations but have not observed evidence of any poisoning effect in their patients As a further test they gave two dogs the compounds by mouth After three months administration of 2 oz per day for six days a week no evidence of toxic changes were observed in macro or microscopic examination of the organs of the experimental animals which were killed in apparent good health In such a severe relapsing and troublesome complaint as ulcerative colitis this treatment may be well worth a trial, but it may still be wise to remember Emery's[3] warning when reviewing the subject "The physician who uses adsorbents is entering a field of therapeutics in which the pitfalls are not clearly indicated and the usefulness of which has not been definitely defined "

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[1] Penfield W J and Butler H M *Med J Aust* 1933 i 336

Ibid July 24th 1937 p 1 8

[1] Smith W *Lancet* 103 , i 43

[2] Eyerly J B and Breuhaus H C *J Amer med Ass.* July 17th 1937 p 191

SUDAN MEDICAL SERVICE

VARIOUS recent developments in the Sudan Medical Service remain unrecorded in our Student's number, since the revision of the notes about this service reached us only after we had gone to press Among its other duties, the service is responsible for the health of the Sudan Defence force Instead of one assistant director there are now three, allocated to hygiene and public health, hospitals, and laboratory services There are also two Government specialists, notably a gynæcologist and obstetrician and an ophthalmologist A number of Sudanese medical officers trained at the school of medicine at Khartoum hold appointments in the service The rest of the information now supplied to us is in accordance with that provided on p 543 of THE LANCET of August 28th last

THE SOURCE OF HISTAMINE

MANY investigations during the last decade have centred around the presence in blood of a substance whose activity closely resembled that of histamine This substance has, indeed, sometimes been called histamine, though without any direct evidence On p 730 Dr Code and Prof Macdonald relate the results of experiments that throw light on the nature and localisation of this active material Quite fundamental among these is that of Code and H R Ing, who showed that the active substance was present as such in blood, was not produced by the process of extraction, and, having been isolated as such in pure crystalline form, was beyond doubt histamine Most investigators had previously come to the conclusion that the histamine of blood was present not in the plasma but in the red cells They arrived at this conclusion, no doubt, from comparison of the histamine activity of plasma and of whole blood respectively Code, however, has now demonstrated that pure red cells, like plasma, contain very little histamine, the histamine of the centrifuged corpuscular layer he found to be confined almost entirely to the top layer consisting of white cells and platelets Further study has convinced him that most of the histamine is probably in the eosinophil leucocytes, and this opinion is supported by Code and Macdonald's examination of the blood of patients suffering from various blood diseases, the highest histamine value being found in the blood of patients with myeloid leukæmia, in which there is a large increase in the eosinophil cells Patients with pure eosinophilia also show increased blood histamine values The relation of histamine to asthma, studied by E Haworth and Macdonald, is also noteworthy They have found that card room workers in the cotton industry, who suffer from stripper's asthma, also have a somewhat raised blood histamine

There remain many interesting and somewhat obscure points in connexion with the blood histamine and its distribution, for example, the relation of histamine to surgical shock, or to the shock following extensive burns, or the histamine content of the blood in reactive hyperæmia It seems that although *large quantities of histamine may be produced* locally under various pathological conditions, the histamine content of the blood in general circulation is nevertheless not much raised Its constancy is attributed to the continuous destruction of histamine in the lungs, presumably by the action of the histaminase discovered by Best and McHenry

CHOLERA IN CHINA

A HUNDRED years ago cholera was travelling from Asia to Europe, and in 1832 it reached America Its ravages were checked partly perhaps by climate but largely by what we call civilisation, and it is civilisation in the western sense that chiefly keeps the disease within bounds in its eastern home The reports of cholera from China at a time when this type of civilisation is threatened by war and famine are correspondingly alarming In Hong Kong it is believed that the outbreak of the past three months, which has been almost confined to the Chinese, reached its peak in the week ending August 22nd, when there were 314 admissions to hospital, with 205 deaths, and 66 mortuary cases[1] Almost all those affected have been people whose resistance was reduced by destitution, and anxiety is expressed lest the disease should recrudesce as the stream of war refugees into the colony grows greater Some, though not all of these have been inoculated, and medical inspection of trains and vessels has been instituted. It is estimated that in Canton there were some 3500–5000 cases of cholera between July 15th and Sept 1st, with a fatality of about two-thirds In Shanghai the number of fresh cases rose during the week ended Sept 11th to 394, but with only 35 deaths the fatality-rate seems to be far lower than in other cities The disease is said to be spreading rapidly along the Yangtse valley, and although in the ordinary way it declines in China in September the movement of troops and refugees may alter its usual course Anti-cholera vaccination is practised in Canton as well as in Hong-Kong, and "filtering stations" have been set up on the Hankow-Canton railway

Though the above figures seem large they must be considered in the light of those reported from other parts of Asia In India (including Burma) 3628 cases were notified in the last week of July

THE Prime Minister will inaugurate a national health campaign at a reception, to be held at the London School of Hygiene and Tropical Medicine on Sept 30th, which will be attended by representatives of local authorities throughout the country He will be supported by the Minister of Health, Sir Kingsley Wood, the President of the Board of Education, Lord Stanhope, Mr Arthur Greenwood, Sir Percy Harris, and others, and his speech will be broadcast on the National wavelength The campaign will extend over five months and, after a general introduction will emphasise in turn the maternity and child welfare services, the school medical and dental services and the milk in-schools scheme, and the tuberculosis and other services for adolescents and adults In March attention will be drawn to facilities, actual and prospective, for physical training and recreation

OUR Paris letter last week contained an erroneous announcement of the death of Dr ANTOINE BÉCLÈRE, member of the Academy of Medicine and honorary president of the Société de Radiologie Médicale de France Dr Béclère, who lives in the rue La Boëtie in Paris, and is an honorary member of the Royal Society of Medicine, is in good health, and the announcement should have related to his cousin, Dr HENRI BÉCLÈRE, radiologiste des hôpitaux, who died on August 1st

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[3] Emery E S, *J Amer med Ass* 1937 108 202

[1] Weekly Epidemiological Record (League of Nations) Sept 16th 1937, p 456

SPECIAL ARTICLES

PELLAGRA IN EGYPT

By P Ellinger[*] A Hassan

and M M Taha

(*From the Lister Institute London and the Biochemical Department of the Medical Faculty of the University Cairo*)

This paper contains a preliminary report of the results of recent investigations on pellagra in Egypt These covered the relative frequency the seasonal incidence the distribution between sexes, ages and trades the dietary history and other contributory causes as well as the clinical symptoms of the disease including porphyrin excretion

One of us (P F) with Ldgar and Lucas (1935) has shown that rats deprived of the vitamin B_2 complex excrete a highly concentrated coproporphyrin in the urine which disappears when the constituents of the vitamin B_2 complex are added to the diet Ellinger and Dojmi (1935a and b) found in Posusje Southern Jugoslavia, that people subsisting largely on maize and suffering from endemic pellagra had a considerably increased porphyrin excretion which reached its maximum at the beginning of the attack and usually *decreased before the* clinical symptoms were fully developed Beckh Ellinger and Spies (1937) examined pellagrins from Cleveland Ohio U.S.A. of whom all but one had a history of addiction to alcohol; most of these excreted highly concentrated porphyrins which disappeared from the urine with the improvement of the clinical symptoms *after successful* treatment These authors showed further that the clinical symptoms of pellagra are very similar to those of genuine acute porphyria The work here described was *carried* out in Egypt between March and May 1937 in order to study some of the pellagra problems including the excretion of porphyrins

Results Obtained

The investigation was carried out in different villages of Lower and Upper Egypt in a few hospitals, and in a mental hospital in Cairo Since the conditions of pellagra in Lower and Upper Egypt differ greatly the investigation had to be done differently and the results are dealt with separately

IN LOWER EGYPT

Examinations for pellagra were made among the inhabitants of the villages Dondeit and Oleila near Mit Ghamr in the province of Dakahlija and of Nahtai and Aisha near Zifta in the province of Gharbija, both provinces being in the middle of the Nile Delta. Urine specimens were collected and their content of porphyrin and indican was tested in the Biochemical Department of the Medical Faculty Cairo

Relative frequency—A total of 204 people were selected at random and examined on March 23rd–25th 1937 most were re-examined on April 6th–8th, on April 21st–22nd and on May 5th Of the 204 people examined 70 (34 3 per cent) were found to be suffering from active pellagra a number which can be taken as a rough indication of the incidence of pellagra in the villages of this district

A case was considered to be pellagrous when either specific dermatitis or glossitis or stomatitis were present and attacks of pellagra in former years were reported In case of a first attack diagnosis was made when either a *characteristic* dermatitis on different parts of the body was present or the coincidence of at least two of the cardinal symptoms: dermatitis; glossitis and stomatitis diarrhœa The presence of diarrhœa alone was not *regarded as a certain sign on account of the frequent* infection of the gastro-intestinal tract By means of this definition some mild and many undefined cases of pellagra may have been omitted

Seasonal incidence—There are no official statistics of pellagra in Egypt, but these would have had little value since only a small proportion of pellagrins seek medical help We were lucky to obtain from an ankylostoma and bilharzia hospital in the Delta not far from Cairo exact records of the 805 pellagrins who sought advice in the three years 1934–36 Though no season is exempt, about 60 per cent of these *pellagrins attended the hospital in the months of* March April and May when the attendance at hospital which is much higher in the first six months of the year reaches its peak.

Sex and age—Among the 204 people examined 35 were boys 10 were girls, 127 were adult men, and 32 adult women The respective incidence of pellagra in these four groups was 14 (40 per cent.) 5 (50 per cent) 46 (36 per cent) and 5 (16 per cent.) Thus the proportion of those affected among the children was higher among adult men about equal and among adult women considerably lower than the average (34 per cent).

The distribution of pellagra in different age groups showed a relative maximum in the second decade, but in the first and third decade the disease was more frequent than the average After the thirtieth year the incidence progressively decreased.

Trade incidence—Of the 204 people examined 137 (67 per cent) were of the farm labourer or small farmer class 14 (7 per cent) were unemployed or beggars 13 (6 per cent) koran readers and 40 (20 per cent) were village craftsmen, guardsmen or members of their families No definite relation between occupation and the incidence of pellagra was observed

Diet.—The usual diet in the villages of the central Delta consists chiefly of bread with some vegetables and cheese milk occasionally and meat once or twice every month Nearly everyone has a hot evening meal of vegetables cooked in oil or fat Between September and November large quantities of fresh dates are eaten by all classes The bread is made with yeast either from maize flour (whole grain) or from maize flour mixed with about 4 per cent of holba, the ground seeds of the legume *Trigonella fœnum græcum* During the wheat season (May to September) many even of the poorer people add small quantities of wheat flour while wealthier ones make their bread from pure wheat or barley flour or from a mixture of wheat or barley with maize The well to-do people and some of those dependent on charity such as koran readers or beggars receive a good mixed diet About three-quarters of the pellagrins and one third of the non pellagrins were subsisting on pure maize bread and 7 per cent of the pellagrins and 28 per cent of the non pellagrins had a good mixed diet

Clinical symptoms—Dermatitis was found in 69 (99 per cent) of the 70 cases diagnosed as pellagra the lesions consisted of erythema, desquamation depigmentation, pigmentation, or atrophia often combined occurring on parts exposed to light Skin lesions were also found on pressure points—e g elbows and ankles but never in the neighbourhood of the genitals Stomatitis and glossitis sometimes with angular stomatitis were observed in 48 (68 per cent) and diarrhœa in 37 cases (53 per cent) Only 3 pellagrins (4 per cent) showed symptoms of an incipient subacute combined sclerosis and no mental symptoms were observed. Two patients showed œdema of the scrotum or the legs and 4 enlargement of the parotid gland Anæmia as estimated by inspection of mucous membranes of mouth and conjunctiva was present in 42 (60 per cent) pellagrins and 58 (43 per cent) non pellagrins The conditions of our work did not admit of blood examinations

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Parasitic infection.—Sixty-nine pellagrins (99 per cent.) and 86 non-pellagrins (64 per cent.) were found to be infected with intestinal parasites (including ankylostoma, *Schistosoma mansoni* and *Hæmatobium*, dysentery amœba, ascaris, oxyuris, &c.

Indicanuria.—In order to detect any disturbance of absorption from the gastro-intestinal tract the indican excretion was tested. Indican was present in 67 pellagrins (96 per cent.) and in 93 non-pellagrins (69 per cent.).

Porphyrin excretion.—Twenty-four hour specimens of urine were unobtainable and possibly the porphyrin values of the chance samples tested may not be accurate. The error, however, is probably small, for the values determined three or four times during six weeks on stationary pellagrins were always of the same order. The values for the porphyrin content may be somewhat too high because the large number of tests made (by the method of Beckh, Ellinger, and Spies (1937)) and the limited time at our disposal did not permit of separation of the other urine pigments soluble in ether and hydrochloric acid; 67 pellagrins (96 per cent.) and 47 non-pellagrins (33 per cent.) had an increased porphyrin output, associated usually with intestinal infection. Among the non-pellagrins 23 (28 per cent.) of the 81 men examined, 15 (56 per cent.) of the 27 women, 8 (38 per cent.) of the 21 boys, and 1 of the 5 girls showed increased porphyrin excretion. Of the total of 204 (non-pellagrins and pellagrins) examined 114 (56 per cent.) showed an increased porphyrin excretion. The differentiated figures are: adult men, 68 (54 per cent.) out of 127; adult women, 20 (62 per cent.) out of 32; boys, 20 (57 per cent.) out of 35; and girls, 6 (60 per cent.) out of 10. Indican was present in 92 per cent. of the non-pellagrins and 57 per cent. of those without porphyrinuria.

The investigations were made from the end of March to the beginning of May when the annual peak of the pellagra incidence was over, and therefore the porphyrin excretion could be followed during the course of the disease only in 15 cases of recent onset. In 4 of these the examination was begun when the clinical symptoms were at their height and there was no increase in porphyrin excretion, but in later examinations an increase was observed while the clinical symptoms remained unchanged. The 11 other cases were first observed either before or just after the onset of clinical symptoms; here the porphyrin excretion was at first high and decreased as the clinical symptoms developed, increasing again in 4 of them at a later stage. The urine specimens of pellagrins during the stage of reduced porphyrin output were mostly completely free from porphyrin or contained much less than those of the average non-pellagrins. This was specially marked in children. In all cases which were successfully treated (cf., Ellinger, Hassan, and Taha 1937) the increased porphyrin excretion disappeared before or simultaneously with the clinical symptoms. In 2 non-pellagrins which were treated with dried yeast the increased porphyrin excretion disappeared also.

IN UPPER EGYPT

In Upper Egypt pellagra is rare and cases could only be traced with the help of the local medical officers. Between April 13th and 18th, 1937, pellagrins were examined in Armant, Luxor, Qena, Nag Hammadi, Girga, Sohag, Assiut, Mallawi, Abu Korkas and Minia, and the neighbouring villages. In all 39 pellagra cases were seen, a number probably only a little short of the total at this time in the districts visited; 34 non-pellagrins were also examined.

It was not possible to estimate the *incidence* of pellagra *relative* to the total population or to obtain much information about its *seasonal incidence*. The distribution of the disease between the sexes was similar to that in Lower Egypt. Of the pellagrins 21 were adult men, 1 an adult woman, 10 were boys, and 6 girls. About one quarter of the pellagrins were children under ten years of age, a much higher proportion than in the Delta. As in Lower Egypt about a third of all the cases were between eleven and twenty years but only an eighth between twenty-one and thirty years. Pellagra was relatively rare in people over thirty. About three quarters of all persons examined were farm labourers or small farmers; 1 only of the pellagrins was a wealthy farmer, the rest consisted of the same trades as in Lower Egypt.

The usual *diet* in Upper Egypt differs from that in Lower Egypt. In both cases the main food is bread but in Upper Egypt it is not made chiefly from maize all the year round. From April to July it is made with yeast from barley, from August to November from millet (*Sorghum vulgare*), and only from December to March from maize. Besides bread, vegetables and occasionally cheese, milk, and eggs and more rarely meat are eaten; in the autumn, dates. Most of the pellagrins and the non-pellagrins had this type of diet.

The distribution of the chief *clinical symptoms*—i.e., dermatitis (100 per cent.), stomatitis and glossitis (64 per cent.), and diarrhœa (54 per cent.)—was much the same as among the pellagrins of Lower Egypt. Lesions of the nervous system were, however, more common than in the Delta. Two cases had pellagrous confusion and 10 lesions of the spinal cord. Œdema and parotitis were not found. Anæmia was present in 35 pellagrins and in 10 non-pellagrins.

Parasitic infection of the intestines was much less frequent than in Lower Egypt. Ankylostoma was rare and *Schistosoma mansoni* only observed in people who had been infected in Lower Egypt. Infection with *Schistosoma hæmatobium* was found only in districts with perennial irrigation; this is general in Lower Egypt but less common than basin irrigation in middle Upper Egypt. Amœbic dysentery is there more common. All the pellagrins examined and only a quarter of the non-pellagrins were infected with parasites.

The figures for the incidence of *indican* are incomplete, since some of the smaller samples of urine were exhausted by estimations of the porphyrins. Indicanuria was more common among the pellagrins than among the non-pellagrins.

An increased *porphyrin excretion* was found in 24 pellagrins and in 5 non-pellagrins; among the latter, 4 showed indicanuria, whereas only 9 of the 28 non-pellagrins without increased porphyrin excretion showed indicanuria.

INMATES OF THE MENTAL HOSPITAL

Nine pellagrins were examined in the mental hospital in Abassia. Three of them had been admitted suffering from pellagra during the present pellagra season, 1 seven years previously and the remaining 5 had developed the disease during their stay in the hospital. The latter require special mention.

All the cases showed severe dermatitis and mostly *stomatitis and glossitis* also. It was not possible to obtain information about diarrhœa. None had been admitted to the hospital with pellagrous insanity and none showed any lesion of the spinal cord. We were told that parasitic infection of the intestines is very common among the inmates, but there was nothing definite known about the infection of the cases examined by us. Maize or maize bread is not used to feed patients. They get a mixed diet that is adequate for villagers but might be sometimes too rough for town people who can obtain a more suitable diet. Of the 5 pellagrins who developed the disease in the asylum 1 town girl developed pellagra after the ordinary diet had been substituted by chance for the special diet for a few days, 2 after refusing to take food, and the remaining 2 immediately after an attack of acute pneumonia.

All the patients in the asylum had an increased porphyrin excretion which went down as the clinical symptoms became less pronounced, which occurred without any special treatment.

Discussion

CLINICAL SYMPTOMS

The cardinal symptoms and their relative frequency in pellagrins were similar in the two districts visited but lesions of the nervous system were more common in Upper Egypt. Skin lesions were present in all but one of 118 cases, in contrast with experience in America (Sydenstricker and Armstrong 1937, Beckh, Ellinger, and Spies 1937). The "butterfly pigmentation" of nose and cheeks and the folliculitis of the skin of the face known as sulphur granules (Bigland 1920) were too common among the general Egyptian population to be considered specific for pellagra The pellagrous dermatitis was regularly present in all parts of the skin exposed to light but much less common on the pressure points The boundary line of the skin lesions followed closely the edges of the clothing and when owing to warmer weather the clothing of active pellagrins was reduced a fresh rash of dermatitis developed on the parts recently exposed to sunlight which was without doubt due to exposure to light This sensitiveness to light is caused by porphyrins circulating in increased concentration in the blood of potential and active pellagrins (see Beckh Ellinger and Spies 1937) Porphyrins may also cause skin lesions in parts of the body not exposed to light (see Schreus and Carrié 1931 Gottron and Ellinger 1931 Beckh Ellinger and Spies 1937) which may explain the dermatitis found at pressure points Lesions of the skin of the genitalia were never observed in contrast to reports from America (Spies private communications) where dermatitis is often present in this region Stomatitis and glossitis as well as diarrhœa were also less common than in U S A. (Sydenstricker and Armstrong 1937) The rarity of nervous lesions was remarkable of the cases analysed by Sydenstricker and Armstrong (1937) more than 50 per cent showed such lesions In the pellagrins of the Delta these lesions were almost completely absent and in Upper Egypt they were observed in 12 of 34 pellagrins Peripheral neuritis was never found *possibly owing to the lack of alcohol* intake The fact that lesions of the nervous system occur only in the latest stages of severe pellagra cases suggests that pellagra in Lower Egypt is in general not a severe disease and may be more serious in Upper Egypt in spite of its greater rarity The mortality rate of pellagra in Egypt would appear to be very small, though it is not possible to get exact information on this point as even severe cases are only rarely admitted to the hospitals

PARASITIC INFECTION

Although infection of the gastro intestinal tract with parasites is very common among the villagers of Lower Egypt it was surprising to find all pellagrins but one infected by parasites but only about two thirds of the non pellagrous persons examined. Similar observations are reported by Sandwith (1898) Long (1910) Fakhry (1932) and Biggam and Ghali oungui (1933) Of the non pellagrins those showing increased porphyrin excretion were much more frequently infected than the others. In Upper Egypt the reports of medical officers and personal inspection showed that districts with basin irrigation, where infection with intestinal parasites is rare were free from pellagra An example is the village of Karnak near Luxor in which increased porphyrin excretion was also almost absent In districts with perennial irrigation parasitic infection was more common but still much less so than in Lower Egypt. The fact that even under these conditions all the pellagrins examined in Upper Egypt without exception were found to be infected suggests a definite connexion between parasitic infection and pellagra. Pellagra in Egypt may therefore be regarded as so-called secondary pellagra due to parasitic infection of the gastro intestinal tract It would be interesting to know whether the so called "endemic pellagra in other parts of the world may not also be due to intestinal infection or other injuries of the intestines In about half of the endemic pellagrins described by Sydenstricker and Armstrong (1937) complications with other diseases were observed and in all of 3 autopsies on "endemic pellagrins described by Spies, Chinn and McLester (1937) there were serious non pellagrous lesions of the intestines

Of the parasites found in pellagrins ankylostoma is most common generally inhabiting the small intestines as also do dysentery amœba, ascaris and oxyuris *Schistosoma mansoni* which is very common in the Delta, is generally found in the colon but occasionally attacks the small intestines also *Schistosoma hæmatobium* replaces *Schistosoma mansoni* in the perennially irrigated districts of Upper Egypt usually living in the urinary tract but sometimes also attacking the intestines It is suggested that these parasites injure the mucous membrane of the small intestines and thus interfere with the satisfactory absorption of the diet especially of the pellagra preventive dietary factor From the indican excretion it is evident that in pellagrins other water-soluble foodstuffs—e g the proteins—are also incompletely absorbed Indicanuria was also observed more often in those non pellagrins showing high porphyrin excretion

PORPHYRIN EXCRETION

In Lower Egypt almost all the pellagrins examined had an increased porphyrin excretion but in a high proportion of the non pellagrous villagers there was also abnormal porphyrinuria The relatively few fresh cases of pellagra which were examined repeatedly in the Delta confirmed the observation of Ellinger and Dojmi (1935a and b) in Jugoslavia that porphyrin excretion is at its height before and at the beginning of a fresh onset and generally decreases during the development of the clinical symptoms, sometimes increasing again at a later stage of the disease As in the case of the alcoholic pellagrins observed by Beckh, Ellinger and Spies (1937) the increased porphyrin excretion disappeared simultaneously with the clinical symptoms when the patient was cured by yeast or other therapeutics as described by Ellinger Hassan and Taha (1937) In the pellagrins examined in Upper Egypt increased porphyrin excretion was found less often As these cases were examined only once it is possible that the tests were made during the porphyrin free stage of the disease. Increased porphyrin excretion in non pellagrins was also much less common in Upper Egypt than in the Delta, probably on account of the much less frequent parasitic infection It is significant that increased prophyrin excretion in non pellagrins was also reduced when yeast was given This suggested that, as in rats deprived of the vitamin B_2 complex a similar deficiency in human beings is also connected with an increased formation, circulation and excretion of porphyrins which can be obviated by adding the vitamin B_2 complex to the food The stage of increased porphyrin excretion may thus be regarded as a pre pellagrous condition No attempt can be made to explain the mechanism of the increased porphyrin formation until it is known to which isomeric series the pellagra porphyrins belong (see Beckh Ellinger and Spies 1937) work to this end is now in progress

SEASONAL INCIDENCE

The hospital statistics mentioned do not show the true incidence for Lower Egypt as the pellagrins are not accustomed to attend the hospitals at the onset of the disease but come only when the weakness caused by continuous diarrhœa or the onset of nervous lesions interfere with the daily work, usually not earlier than two months from the onset The pellagra season in Lower Egypt would seem to begin slowly in November and December rising steeply in January, February, and March and falling rapidly in April and the first half of May, a statement which was in agreement with the opinion expressed by the hospital doctors in Mit Ghamr and Zifta The pellagra season in Lower Egypt is much earlier in the year than in the Southern U S.A (May to July (Sydenstricker and Armstrong 1937)) and in Jugoslavia (April to July (Ellinger and Dojmi 1935b)) It may be noted that the beginning of the pellagra season coincides with the time when the wheat stores are empty and ends with the wheat harvest

DIET

There can be no doubt that a great scarcity of vitamin B_2 complex is a factor of the greatest importance in the development of pellagra Pure maize bread is much more often eaten as the main dish by pellagrins than by non-pellagrins and good mixed diet is four times more often found among the latter than among the former But pellagra was found also in a well to do farmer on a good mixed diet but seriously infected by various parasites The relatively slight character of the Lower Egyptian pellagra may be due to the fact that the lack of the pellagra preventive dietary factor in the food is not so great as for example in Posusje, Jugoslavia, where the diet consists exclusively of maize for many months The fact that in Upper Egypt pure maize bread is only eaten for four months of the year may account for a greater rarity of pellagra as well as the smaller incidence of parasitic infections

AGE AND SEX INCIDENCE

In both districts of Egypt studied three quarters of the pellagrins examined were under thirty, while in Southern U S.A Sydenstricker and Armstrong (1937) found four-fifths of all pellagrins between the ages of twenty one and sixty The first decade was much more affected by pellagra in Upper Egypt than in the Delta The sex distribution was surprising In both districts of Egypt girls and boys under fourteen years were about equally affected, but relatively many more adult men than women. The opposite distribution in adults is described by Sydenstricker and Armstrong (1937) in Georgia, by Nauck (1932) in Transcaucasia, by Love (1933) in India, and of the pellagrins observed by Ellinger and Dojmi (1935a and b) in Posusje Jugoslavia about nine tenths were women These authors related the frequency in women to the hard work performed by them in the open air while the men of the district did no physical work at all and have better food In Egypt the social conditions are just the reverse The adult male farmer works exceedingly hard in the fields and the married women remain at home Of the adult women pellagrins in our investigations all but one were either unmarried, divorced, or widowed, and thus compelled to work in the fields This indicates that hard work in the open air is one of the causal factors in development of pellagra and this theory is in accord with the fact that complete rest without alteration of diet or administration of therapeutics may cure cases of pellagra which are not too serious The relatively large incidence of pellagra in children under ten in Upper Egypt may be due to the poorer economic conditions in consequence of which more children work in the fields than in Lower Egypt

Examinations of non-pellagrins in Lower Egypt showed increased porphyrinuria to be much more frequent in adult women than in men This is in agreement with the fact that the causal factors of the porphyria, parasitic infection and dietary deficiency, affect both sexes equally and pellagra is much rarer among the women Hard physical work performed in the open air precipitates the symptoms of active pellagra upon the pre pellagrous condition of increased porphyrin circulation This precipitating factor was in 3 cases found to be an intercurrent illness In 2 of the mental hospital cases and in 1 farmer symptoms of pellagra occurred after the onset of a broncho pneumonia and disappeared without any treatment or alteration of the diet when the infection was over

Conclusions and Summary

(1) The results of a clinical investigation of 204 inhabitants selected at random in villages of the Nile Delta showed 70 (34 per cent) to be suffering from pellagra A clinical investigation was also made of 39 pellagrous and 32 non pellagrous people in Upper Egypt and of 9 pellagrous inmates of a mental hospital Pellagra is very common in the villages of the Delta, very scarce in those of Upper Egypt, and almost absent in the bigger towns

(2) Parasitic infection of the gastro intestinal tract was almost invariable in the pellagrins and much less frequent in the non pellagrous population of the same district It was much more common in Lower than in Upper Egypt The pellagra in Egypt is considered to be a "secondary" pellagra to this parasitic infection

(3) Increased porphyrin excretion was observed in nearly all the pellagrins in Lower Egypt In cases of fresh onset of pellagra the porphyrin excretion became reduced when the clinical symptoms were fully developed.

(4) In Egypt pellagra was much more frequent among the hard working men than among married women who led more sheltered lives The parasitic infection and the intake of food deficient in the pellagra preventive dietary factor and consequently the increased porphyrin excretion, however, were equally distributed between both sexes of the Egyptian population

(5) Pellagra in Egypt appeared to result from two concomitant but independent factors malabsorption due to parasitic infection of the intestines and mal nutrition due to a diet insufficient in the vitamin B_2 complex cause an increased formation, circulation, and excretion of porphyrins—i e, a condition of latent pellagra. In such people the onset of active pellagra is precipitated by very hard physical work, especially in the open air, by intensive exposure to sunlight, or by febrile infectious diseases

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TREATMENT OF SYPHILIS

IN spite of the great advances in treatment that followed Ehrlich's discovery of salvarsan in 1910 syphilis remains one of the chief killing and disabling diseases and judged by the admittedly fallacious standard of known new cases it has shown but little diminution in the last ten years. Any improvement in this unsatisfactory state of affairs depends upon the willingness of patients to present themselves for treatment in the initial stages and to persevere until they appear to be cured but it is nevertheless essential that the treatment available should be as rapid and efficient as possible in making the patient uninfectious. The arsphenamines have now been in use for some 25 years mercury for generations and bismuth for 15 years but there is still no agreement on the best ways of using them. In England, for example it is usual to give arsenic in the form of 914 with bismuth or mercury simultaneously whereas American clinics alternate 606 and the heavy metal. Analyses of results are admittedly tedious to carry out and difficult to interpret, but only by their help are suggestions for the improvement of technique likely to be obtained. Such analyses have been made in this country by Glynn Roberts and Bigland[1] by Harrison[2] and on a larger scale by a group of clinics in the United States.

Under the auspices of the Medical Research Council Dr Snodgrass and Dr Peters[3] have now published an account of the cases treated at the Western Infirmary Glasgow during the 12 years ending in 1932. No observations over such a long period have previously been recorded and the series is especially valuable because a standard course of treatment was laid down in the early stages and adhered to in principle throughout. One of the authors has been in charge of the clinic during the whole period so that continuity in the observations made and in the methods of recording has been assured.

There were 1766 cases after excluding many in which a second Wassermann test was not done or in which the diagnosis was doubtful. 570 were early cases and 1196 late. It was found possible to give the standard course to the majority of the former group composed of otherwise healthy young adults but this routine was not applicable to late syphilis where the manifestations are highly variable and the patients older. Syphilis of the heart and of the nervous system was unsuitable for study at a purely out-patient clinic, and the latent and mucocutaneous forms were accordingly selected for more careful examination.

METHOD

The standard course for early cases consisted of 10 intravenous injections of 914 and 12 intramuscular injections of mercury (calomel cream) or bismuth given in 15 weeks with potassium iodide by the mouth, a week's rest being introduced after the seventh injection. Minor modifications were made during the 12 years bismuth replaced mercury potassium iodide began to be given throughout the course and there was a reduction in the total dosage of 914 from 6·0 to 5·85 grammes. The dose of calomel cream used was 1 grain and of bismuth 0·2 g and from 1924 onwards 0·6 g of 914 was given at each dose except the first which was of 0·45 g. A single course was at first considered adequate, but after 1924 it became the routine to give two such courses with an intervening period of from two to three months and to follow these with mercury by the mouth until the end of the second year of treatment. As in all clinics the liability to default was considerable and for this reason and because of ill health or intolerance some patients received considerably less than the full course or their course was extended over a longer period. Of those who received the full standard treatment 11 per cent. showed an unfavourable result. The proportion was definitely increased where the quantity of 914 in the first course fell below 5 g or where the duration of the course extended beyond 18 weeks. Where a full first course but inadequate further treatment was given the failures were about 12 per cent so that extended treatment added little to the total of successes. Clinical relapse occurred in only 2·8 per cent of those who had an adequate first course compared with 4·4 per cent in the whole series. Bismuth appeared to be slightly more effective than mercury males did better than females and the results were the most favourable in Wassermann negative primary syphilis.

THE WASSERMANN REACTION

An inquiry was made in these 570 cases of early syphilis to determine the significance of the Wassermann reaction and of its variations the tests being carried out by Prof C H Browning and Prof E M. Dunlop on a constant technique. The reaction was invariably positive in the 353 secondary cases but a certain number of primary cases showed a suspicious reaction initially which changed to a weak positive or positive reaction after a week or two. It was found that serological resistance mainly followed an inadequate first course and that no cases who had received adequate initial and total treatment became Wassermann fast. A suspicious reaction was found frequently to precede relapse and it was clear that this reading must be regarded as a therapeutic positive when present after a course and as calling for further treatment. Of those who showed variation in their Wassermann reaction during treatment 29 per cent. were not negative in the end, so that this must be considered a bad omen.

Serial tests were carried out every second week on 169 patients receiving the standard course. More than a third of these showed their first negative reaction between the 5th and 8th weeks and another third between the 9th and 12th. About three quarters of the patients required from 3·0–4·0 g of 914 with 1·6–1·8 g of bismuth before becoming negative and 12 per cent did not become so until they had had the full course of 5·85 g of 914. It was clearly shown in the primary cases, though less so in the secondary that the earlier the patient came for treatment the quicker a negative result was obtained. Such serial observations, though of doubtful value in prognosis afford a useful method of assessing the value of alternate schemes of treatment.

Practical difficulties made it impossible to carry out lumbar punctures on more than a minority (145 out of 570) of the patients. In these there was no obvious association between the Wassermann reaction in the blood and in the cerebro-spinal fluid and suspicious reactions commonly persisted in the latter in spite of negative findings in the serum. Of the 15 cases who showed other than a negative reaction none has so far developed any clinical evidence of neurosyphilis but the period is too short for any definite conclusions to be drawn from this The authors stress the importance of a cell count in the diagnosis of early neurosyphilis, and recommend that, seeing that lumbar puncture is inadvisable in the acute stages of the disease, it should be carried out as a routine after two years' treatment and again at the end of the fifth year

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[1] Glynn E. E. Roberts R. E. and Bigland T M (1926) *Spec Rep. Ser med Res Coun.* Lond. No 107

[2] Harrison L. W (1929) *Ibid* No 132

[3] Snodgrass W R. and Peters R. J (1937) *Ibid* No 224

EFFECT OF TREATMENT

Clinical relapse occurred in 25 of the 570 early cases—4 39 per cent —but in only 2 8 per cent of those who had had adequate initial treatment The bismuth group showed fewer relapses than that given mercury Serologically resistant patients were more prone to relapse than the others, but the severity of the initial lesions appeared to have no influence upon that tendency

Excluding local reactions which, though sometimes troublesome and the cause of interruption of treatment or default of the patient, are not often serious, 26 5 per cent of the early cases had intolerance of some kind, gastro-enteritis, jaundice, malaise, and skin eruptions being the commonest Attention to focal sepsis, the diet, the bowels, and oral hygiene were important in preventing these ill effects, and it was found to be valuable to inject the 914 very slowly, but none of the more specific measures tried had much effect Those who showed intolerance often gave a favourable final result, even when their course of treatment had had to be interrupted, but intolerance was nevertheless a potent cause of failure and research into its causes and prevention is urgently required

The investigation of 239 latent cases having positive Wassermann reactions but no clinical signs and with a duration of infection (where known) of over two years showed that 57 per cent could be rendered serologically negative by treatment, and proved that hereditary transmission does occur from these cases, and that direct infection is a possibility The advisability of treating latent cases seems then to be undoubted and the authors advise three courses on the lines of the standard course, to more than which most patients will not be willing to submit, and suggest that in the absence of clinical relapse a case with a persistently positive Wassermann reaction who has had such treatment should thereafter merely be kept under observation

Owing to the impossibility of a uniform régime for the 1196 tertiary cases, only broad conclusions could be arrived at from them It was found that after two years' treatment and observation 63 per cent were still not Wassermann negative, a figure in striking contrast to the 16 7 per cent of failures in early syphilis, and that intolerance was much more common than in the early cases, 44 per cent against 26 5 per cent Where there is no question of the production of marital infection or of hereditary syphilis, it was concluded that the individual would achieve sufficient protection if he receives two courses of 10 injections of 914 and 30 injections of bismuth, with potassium iodide by the mouth A case so treated has a 30 per cent chance of being Wassermann negative at the end of two years and less than a 1 per cent chance of clinical relapse Further treatment is not considered to be of much additional benefit The comparatively poor prognosis in these tertiary cases is a further argument in favour of adequate initial treatment

CONCLUSIONS

Finally the authors make suggestions for the improvement of their present régime of treatment Concentration of treatment in the early weeks would to some extent minimise the dangers of default, and some advantage might be gained by making treatment continuous by giving injections of mercury during the rest periods The main aims must be first to ensure an adequate dosage during the initial course, and secondly to ensure adequate total treatment They suggest that a model course for the average early case should consist of the following

First course 6 injections of 914—alternately 0 45 g and 0 6 g —with 0 2 g of bismuth given biweekly, followed *by 4 injections of 0 6 g of 914* and *0 2–0 4 g of bismuth* given weekly The Wassermann reaction (W R) is then done and treatment is continued with 1 month off treatment, 8 weekly injections of 1 grain of calomel cream, with potassium iodide by the mouth, (W R) 1 month off treatment, repeat first course, (W R) 1½ months off treatment, 10 weekly injections of calomel cream with potassium iodide by the mouth (W.R) 2 months off treatment, repeat first course, (W R)

In all this will occupy 15 months, and 16 65 g of 914, 7 8 g of bismuth, and 18 grains of calomel cream will have been given Until the end of the second year the patient is then to be kept under observation, with repeated Wassermann tests and short courses of bismuth, and the cerebro-spinal fluid is then examined

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INDUSTRIAL HEALTH

THE Government drive to improve the physique, especially of the youth of the nation, provides the text for a discussion of physical fitness in special relation to industrial work in the annual report for the year ended June 30th, 1937, of the Industrial Health Research Board [1] In their survey of the kinds of fatigue imposed on the worker by modern factory conditions, the Board take account of the immense elasticity and power of recovery from stress—physiological or psychological—possessed by the healthy human animal The results of researches into the economical use of muscular strength have been recognised during the year by the Home Office, in revised regulations, on the carrying of weights Owing to the increasing use of machinery, however, few employers now want a worker who can only push and pull—"the agile David is preferred to the slow moving Goliath"

Postural fatigue, it is stated, may still be found, for often the design of the machine or of the working bench or appliance is ill adapted to its purpose The importance of posture in work or play, activity or rest, if fatigue is to be avoided, has already received widespread recognition and merits still more study

Apart from postural fatigue, the pace of the machine to which the modern worker has to become adapted is *not usually high enough to tire the muscles* Yet, as the Report states, "in many factories all workers, fast or slow, in or out of condition, may have to bow to the inexorable rhythm of the machine that drives the shafting. A different sort of fatigue is that due to monotonous repetitive work. A man's work cannot, it is said, be ticked out in regular seconds like a clock, but has its rhythms in time to the pulse of physical and mental energy. This type of fatigue should be borne in mind by those planning physical exercises designed to be recreative, since a worker weary of monotonous tasks is not likely to perform repetitive exercises with any enthusiasm. For those suffering from physical defects also, physical training may have to be modified or graduated to suit the present need and to encourage development.

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[1] *A R industr Hlth Res Bd Lond* 1937 H M Stationery Office Pp 38 9*d* The members of the Board are Dr E P Cathcart F R S (regius professor of physiology University of Glasgow) chairman Mr R R Bannatyne (assistant Under Secretary of State Home Office) Mr R Coppock (secretary, National Federation of Building Trades Operatives) Mr Cyril Burt D Sc.(professor of psychology in the University of London), Dr W W, Jameson (professor of public health in the University of London) Dr R E Lane (medical officer, the Chloride Electrical Storage Co Manchester) Mr R K Law, M P (member of the Medical Research Council) Dr B A McSwiney (professor of physiology University of London) Sir Frederick Marquis (joint managing director Lewis s Ltd) Miss Hilda Martindale (lately director of Women Establishments H M Treasury) Dr J A Nixon (emeritus professor of medicine, University of Bristol) and Air Vice Marshal Sir David Munro, M B (secretary)

The investigations made by the staff of the Board into environmental conditions, physiology and psychology of work, accidents, vocational tests, and occupational sickness are summarised.

Environmental conditions.—The illumination required for work involving the discrimination of detail of different size has been studied, and also, at the request of the National Ophthalmic Treatment Board, the effects of correcting errors of refraction on the comfort and efficiency of persons doing delicate visual work. Of 150 such workers already examined over 40 per cent. were found to require correction. The problem of noise has also been tackled. Its investigation is complicated by the ease with which many people can become immune to accustomed noise, and the difficulty of finding any critical measure of ill effects on those who are sensitive to it. Enough is now known about the kinds and intensities of noise. The suggestion is made for a practicable method of approach—a clinical approach—to study noise: the collection of opinions from noise-sensitive persons—those seriously disturbed by some particular and inescapable noise—and the evalution of their symptoms not in terms of fatigue, which eludes measurement, but in terms of irritability, insomnia, and the development of psychoneuroses.

An attempt has been made to discover the range of warmth within which industrial workers are comfortable and to establish methods of measuring the combined factors which produce a sensation of warmth—viz., temperature, humidity, radiation, and air velocity. A provisional scale of warmth has been put forward which, though it does not extend to temperatures above 76° F., gives due weight to these four factors.

Physiology and psychology of work.—The effects on the worker of incentives offered to induce him to reach a prescribed standard are discussed. Various methods of arriving at a standard output are being studied, specially those which depend on time-motion studies by the so-called "efficiency engineer," to see whether the level aimed at may not be too high for the average worker and thus put a strain on his physiological and psychological reserves. The causes, symptoms, effects, and methods of alleviation of the mental weariness which may be produced by light repetitive work continue to be studied by the Board. Music, played for about an hour around the middle of the work-spell, is said to have been effective as an antidote to boredom; we are not told the view of those workers to whom music is only a disturbing noise.

The temperamental make-up of the industrial misfit (whether subordinate or in a position of authority) and his reactions in the form of nervous symptoms due to emotional instability are being considered from the point of view of assisting staff selection; the present objective is to find out if possible in what environments particular types tend to break down.

Under the heading of *accidents* is discussed the effort to establish a prognostic value for tests for "accident-proneness." Flying as well as motor accidents are under scrutiny. The effects of taking alcohol on speed and accuracy of performance are being tried once more with a specially designed apparatus which allows the subject to control not only his own speed of reaction to stimuli but the speed at which the stimuli are given.

A section on *occupational fitness* summarises research in progress on methods of testing for aptitudes and interests with a view to broadening the basis for vocational advice. The children tested and advised are followed up through their industrial careers. It is hoped to find out whether administrators or educationists without special psychological training would find psychological tests and interviews of any use combined with their other sources of information in guiding young people into their first industrial occupations. The difficulties of this investigation are not minimised, in particular the absence of knowledge of the requirements, apart from the purely technical, of many occupations.

A section devoted to *occupational sickness* summarises the evidence already published[2] of an excess of gastric sickness amongst a group of omnibus workers as compared with a control group of tramwaymen. This section also refers to the work with which the Board is closely associated of the Medical Research Council's committee on industrial pulmonary disease. Its chief problem is that of differentiating existing forms of pulmonary disablement which resemble but do not conform to the definition of certifiable silicosis. As is pointed out, the incidence of certifiable silicosis varies from pit to pit, not only in different parts of a coal field, where differences may be found in the amounts of hard siliceous rock which the miner may have to drill, but even in adjacent pits in the same part of a coalfield where environmental conditions might be presumed to be similar. "Non-certifiable silicosis," it appears, is subject to similar vagaries. The difficulty is to relate the different clinical phenomena to the different environments and working conditions under which they are to be found. The ground, it is stated, is now cleared and an area has been selected for a large scale investigation under the auspices of the Medical Research Council: this is to be statistical, environmental (including composition and concentration of the dusts formed from drilling, shot-firing, and other underground operations, temperatures, humidities, and other working conditions), clinical, and radiological.

Reference is also made to the work of another committee of the Medical Research Council—that which directs research into the toxicity of the volatile substances commonly used in industry as solvents, and to the dangers to health which may occur when workers inhale them over long periods in low concentrations. These dangers have sometimes been unsuspected until the occurrence of severe and even fatal cases of poisoning. The Board are closely associated in this work, and are shortly issuing a report containing a comprehensive summary of the published work on the toxicity of industrial solvents.

Sickness absence and labour wastage.—The incidence of sickness absence has been ascertained in a group of workers among whom the causes of labour wastage are also analysed. The group had a rate of 7·2 days absence per year (as compared with the figure of 6·0 normally to be expected on the experience of past investigations) Of this about 3 5 days per person was due to influenza and colds, accounting for 48 6 per cent of the total loss The other diseases in order of frequency were tonsillitis, gastric affections, accidents, and rheumatism

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[2] See *Lancet*, July 10th, 1937, p. 97.

The Board affirm that despite the gap of time between experimental proof and accepted industrial practice, and despite years of industrial depression, there has been amongst industrialists steadily expanding interest in the possibilities of applying in practice the results of research This interest is also reflected in the provisions of the new Factories Act Moreover knowledge is being spread by new paths, for example by the recently formed Association of Industrial Medical Officers, and by the inclusion at the London School of Hygiene and Tropical Medicine of instruction in industrial physiology and psychology and the relevant methods of statistics as part of the course of post graduate study for the D P H

THE ROCKEFELLER FOUNDATION

SINCE 1913 the Rockefeller Foundation has administered a vast fund that aims, to quote its charter, "at promoting the well being of mankind throughout the world" Its programme has extended into the fields of public health medicine, the natural and social sciences, and the humanities, and it has given financial support to universities, laboratories, and research institutes where the promise of practical results seemed brightest Its report for 1936 shows that during the year it disbursed in this way over two million pounds, two thirds of which was in the United States and one third in 53 other countries

The International Health Division of the Foundation, which deals with public health problems, is the only branch that carries out research on its own account, and it concentrates its efforts upon the prevention of those diseases that offer a reasonable prospect of success For a number of years the Division has been investigating yellow fever, malaria, hookworm disease, schistosomiasis, tuberculosis, and yaws, and it has now included scarlet fever and influenza in its inquiries Its researches are carried out by field expeditions, supported by local and central laboratories in association with the governments concerned During the last five years it has made a survey of the distribution of yellow fever, which has necessitated the provision of laboratories at Lagos in Nigeria and at Bahia and Rio de Janeiro in Brazil, and has established the fact that this disease is endemic in these regions The Division has been largely instrumental in the production of an effective method of prophylactic vaccination against yellow fever, using a low virulence virus that does not entail the previous injection of immune serum Among other activities may be mentioned the reduction of yaws in Jamaica by some 80 per cent, cöoperation with the Egyptian Government in the control of schistosomiasis by means of canal clearance, and work upon malaria prevention in countries as far apart as Italy and the Madras Presidency The Division has also aided local and central governments in the extension of their health services, especially in those countries where the need seemed greatest and funds were least plentiful

In medicine the Foundation concentrates its attention mainly upon mental and nervous diseases, the branch that it considers to be most in need of further development It has assisted such projects as studies of child delinquency, of the viruses affecting the nervous system, of the rôle played by inheritance in the causation of mental disease and defect, of conditioned reflexes, and of the interrelation of emotional and mental states with physical diseases and disabilities In this country it has helped to support the Galton laboratory, which is investigating the hereditary transmission of mental defects, and it has made grants towards work on the physiology of the nervous system at Cambridge University

In other directions the Foundation has supported studies in endocrinology, genetics, and physiology, and the application of chemical, physical, and mathematical techniques to biological problems, and it has expended £900,000 upon those branches of the humanities and the social sciences that seem likely to improve human relations and culture

The post graduate fellowships wholly supported by the Foundation amounted to 504 during 1936, of which 202 were allotted to public health and 77 to medicine, and the Foundation was partly responsible for a further 196 awarded by other institutions such as the Medical Research Council Finally, since 1933, contributions have been made towards the salaries of those exiled scholars for whom there seemed to be a strong probability of permanent employment

VIENNA

(FROM OUR OWN CORRESPONDENT)

MORE MEDICAL STUDENTS AND GRADUATES

THE winter session of the University of Vienna will begin on Oct 1st The board of the University has just published the schedule of official classes and lectures, some of which are interesting and instructive We learn that in the academic year 1936–37 no less than 1430 students obtained the degree of "doctor" of one of the four Vienna faculties (legal, medical, philosophical, or theological) Of these, about 20 belong to the last-named faculty, this figure has remained fairly constant for eight years 540 were made doctors of law and 450 doctors of medicine About 30 per cent of the total graduated students were women A constant rise in the number of medical graduates has taken place since 1930 The number of medical students was 3466 last term (amongst them 718 females), which figure corresponds to 39 per cent of the total of 8881 university students This is the first time that a pronounced decrease in the number of medical students is reported It is most likely that this next term will see a further reduction, as the authorities expect another drop in the number matriculating Such a drop would be due not only to the lessened prospects offered by a medical career in this country but also to the relative absence of new students from foreign countries—viz, Hungary, Poland, and the Balkans, who have been discouraged from taking their course here not only by their own national authorities but also by the board of the Vienna University This board will not now accept any new first-year student of medicine from abroad, before all the Austrian students who desire to take up medicine have been accommodated in the laboratories and dissecting rooms The space there is limited, and moreover the subjects available for dissection are not too abundant

RESULTS OF THE LAST CENSUS IN AUSTRIA

Some interesting figures relating to the number of males and females in Austria have now been reported from the Statistical Bureau of the Ministry of Health The population of the republic has increased within the last 11 years only by 228 000 persons or 4 per cent This is due mainly to reduced mortality figures owing to longer life of individual inhabitants and not to an increase of births. Austria stands last in the series of European countries classified in respect of increase of population In the period mentioned above the number of persons deceased in Vienna exceeded the number of births by 54 000 Thus for instance in 1920 there were born 16 372 living babies in the year 1934 only 11 622 in the last pre war year (1913) the figure stood at 37 632 It has since gone down by over 60 per cent At present there are 108 females for every 100 males in this country In all the neighbouring countries the figure is below that for Vienna the proportion is 121 females to 100 males and in the seven larger cities the proportion is nearly the same (16 or 118 to 100) Only in the rural districts are the conditions better Over 52 per cent of the total population in Austria are unmarried 39 per cent are married, the remainder (9 per cent) widowed For every married couple we find only 1 0 children—that is not enough to substitute the parents In Vienna we have on an average only 12 children per 10 married couples; 30 per cent of all matrimonial unions in this city remain sterile only 10 per cent have two or more children. A remarkable fact is pointed out in the report Only in communities with less than 2000 inhabitants do we find four or more children in one family more than 25 per cent of all unions in these places have produced four or more children The statistical data for Austria show that for every 100 women of reproductive age there were in 1910 17 children in 1923 13 in 1934 only 6 children. In 1910 we had for every 10 working" and earning men 8 old men and 14 children In 1934 the figure was 10 old men and 10 children per 10 working earning men These conditions are very alarming Furthermore we must consider the increasing excess of females over males In Vienna we have now 1 027 708 women against 846 422 men In the age groups 0–14 years we find 138 744 boys against 134 781 girls The excess of females comes into force only in the later age-groups

The birth statistics also form interesting reading In 1890 for every 1000 women living in Vienna there were 133 babies born In 1914 the corresponding figure was 46; in 1924, 26 and in 1934 only 11 A corresponding increase in abortions is believed to have occurred. The number was estimated at 00 000 in 1910 and at 120 000 in 1924 The excess of females in Austria generally and in Vienna especially is viewed with alarm At present there are over 500 000 females at the reproductive age in Vienna, but only 446 000 males of the age group 20–50 years. Thus some 55 000 females are excluded from matrimony assuming that all the males are willing to marry Last year 584 000 men and 360 000 women were engaged in paid work Matrimony would doubtless induce many women to abstain from competition with men, and more children could be born.

A WAR MEMORIAL TO MEDICAL MEN

Out of some 14,000 Austrian doctors serving in the late war 296 were killed or died from wounds or diseases A memorial to these men has been erected in one of the great courts of the Vienna General Hospital and was recently unveiled in the presence of representatives of the Government, municipal and scientific bodies and the medical profession The memorial consists of a sarcophagus-shaped single block of stone 10 ft long 3½ ft high and 3 ft wide showing in bas relief a surgeon killed by a hostile projectile while assisting a wounded soldier The cost of the memorial (some 10 000 Austrian shillings) was raised by the voluntary contributions of doctors The maintenance of the memorial is being undertaken by the Vienna Medical Organisation.

IRELAND

(FROM OUR OWN CORRESPONDENT)

MUNICIPAL AUTHORITIES AND HEALTH QUESTIONS

AT the meeting of the Association of Municipal Authorities held last week at Ennis a comprehensive paper on Social Services with particular reference to questions of health was read by Mrs Maud Walsh, a member of the Dublin corporation and was followed by an interested discussion She spoke of the need for extending the antenatal and child welfare activities and said that there should be antenatal clinics in every town of moderate size Statistics of deaths in childbirth and of infant mortality only partially represented the human waste and suffering caused by lack of instruction and care in the prenatal period In the rural areas a more intensified service of trained nurses should be provided She thought the number of beds in the maternity hospitals quite inadequate and as regards hospitals in general the service should be such that it should never be necessary to ask any patient to leave hospital prematurely in order to make room for an incoming patient She urged the setting up of external clinics in connexion with the mental hospitals She advocated the establishment of public baths open-air swimming pools, playing fields, and other provisions of wholesome means of spending leisure Asylums hospitals and prisons would be less in demand if sufficient facilities were provided to ensure that every boy and girl could develop a love for some open-air activity Not only Mrs Walsh but some of the subsequent speakers spoke strongly of the need for increasing the remuneration of nurses It was in the public interest that nursing should be made an attractive career for girls

PARIS

(FROM OUR OWN CORRESPONDENT)

MEDICAL EXAMINATION OF STUDENTS

IN the autumn of 1935 the Paris Faculty of Medicine organised a system of medical examinations for the students of all faculties Its main object was to comb out the tuberculous from among the students, and its success was such that it was repeated in 1936 and again this autumn. Every effort has been made to render these examinations as attractive as possible strict professional secrecy is promised and the findings of the examinations are communicated to the parents or family doctor only after the consent of the student has been obtained The examinations are conducted at the Laennec Hospital by hospital physicians whose competence is unchallenged. There is of course no fee and the student who is informed of these examinations at the time of matriculation is reminded of their many advantages and of the disasters which may ensue if they are neglected

POST MORTEM AFFORESTATION

In a letter recently published in *La Presse Médicale*, Dr P Clavel of Biarritz draws a picture, at once utilitarian and romantic, of the disposal of the dead His scheme hinges on the fact that motor cars now enable the living to dispose of their dead at any distance that pleases the fancy Instead of the overcrowded cemetery near one's back door, he pictures a distant, beautifully wooded sacred grove where each coffin is surmounted by a newly planted tree With 25 square metres to each coffin and funeral tree, a town of 20,000 inhabitants would in the course of a century have created 100 hectares—some 250 acres—of sacred woods with large avenues and a reserve of timber whose influence on climatic conditions would be as profound as it was beneficial Floods would be automatically checked, agriculture would prosper, and the country would be enriched as well as embellished by this system of post-mortem afforestation Dr Clavel is to be congratulated on giving the old cult of ancestor worship a new turn, showing filial piety devoted to the production of material wealth

PANEL AND CONTRACT PRACTICE

Sickness Visitation in Northern Ireland

ABOUT five years ago the arrangements for sickness visitation in Northern Ireland were examined by a Departmental Committee, which recommended that a coöperative scheme of sickness visitation, to include all approved societies, should be established for the whole of Northern Ireland outside Belfast, and that a joint committee of approved societies should be set up to control the scheme and employ the visitors The recommendation was adopted, and a scheme was prepared and began to work on Sept 1st, 1933, for an experimental period of two years, which was later extended to March 31st, 1937 Last October another departmental committee was appointed to report on the working of the scheme, in particular on its extension to Belfast, and this committee in their report (H M Stationery Office 6*d*) recommend the extension of the scheme to the whole of Northern Ireland

They found that the approved societies were almost unanimous that the scheme had been successful and had provided services in every way superior to those previously available But they express concern at the time spent by the visitors in travelling and the high cost of travelling expenses, which, including motor car depreciation, amount to £2200 out of a total annual cost of £4710, the cost of salaries being £2210 The total annual cost works out at just over 6*d* per member on a membership of 180,000, and in 1936 the number of visits made was about 64,000 During the experimental period approximately half the cost was met from the central insurance fund, and the remainder from the administration accounts of the approved societies, which contribute to the cost by paying a fee of 3*d* per visit and also an annual sum equivalent to a levy of 2¼*d* per head of the membership covered

The committee recommend the continuance of the scheme, extended by the inclusion of the insured persons living in Belfast, who number about 165,000, for an experimental period of three years They think the inclusion of Belfast with its transport facilities would make for simpler administration, and reduce the annual cost per head from 6*d* to 4½*d*, equivalent to a total cost of £6500 a year They found, however, that the proposed extension, though generally approved, met with objection from some societies whose membership is limited to persons belonging to certain religious denominations These societies pressed for the right to require that their members should be visited by visitors of the same denomination, and the committee recommend that the right should be conceded They also recommend that the objection urged by the smaller societies that a charge of 4½*d* per member would impose an excessive burden on their administration accounts should be met by raising the money required in addition to the uniform fee of 3*d* per visit by a levy on the membership on the following scale —

First 5000 members		3*d* per head
Next 5000	,,	3¼*d* ,,
Remaining	,,	3½*d* ,,

Such a levy would raise £5000 in addition to the £1500 that would be raised by the fee of 3*d* per visit if the average number of visits per insured person in Belfast conformed to what has been experienced outside Belfast

The Committee think the extension they recommend would provide a scheme of sickness visitation more comprehensive in its scope than anything of the kind in the United Kingdom They attach importance to, sickness visitation as an essential part of health insurance administration, and in this they are in agreement with the general body of experienced insurance administrators Their report indicates that this Irish scheme has in its working produced data that might afford useful guidance for those who in other parts of the United Kingdom are grappling with the problems of sickness and disablement benefits

The Cost of Prescribing

In an address to the Association of Welsh Insurance Committees last week, Dr T W Wade, medical member of the Welsh Board of Health, spoke of the reasons why the cost of prescribing has risen steadily in the thirteen years since its investigation was taken out of the hands of insurance and panel committees and placed in the hands of the regional medical service The many factors contributing to the increase included the gradual abandonment of self medication by insured persons, the change in age distribution of the insured population, the passing of the old time doctor who preferred to give medicine away rather than write an insurance prescription, the growing use of biotherapeutic substances, and rising prices in the drug market

Caernarvon," added Dr Wade "spends more on drugs than Carmarthen partly because it has more temporary residents and partly because of the coming and going between that county and the neighbouring black spot, as regards high prescribing of South Lancashire Dr A issues twice as many prescriptions as Dr B because he has twice as many chronic patients, or because he is building up a practice, and the new arrivals are all invalids to begin with, and so on The important thing I have to say is this, that in Wales, unlike England, once allowance has been made for the recognisable special factors, there is nothing to choose between one area and another, and not much to choose between one doctor and another There are no such anomalies in Wales as Salford and Rochdale, two towns as alike, one would say as two peas, yet differing in drug consumption by 60 per cent, or Blackburn and Bolton or Birmingham and Wolverhampton."

Dr Wade concluded his address by pointing out that there will soon be about 1 000 000 young persons between 14 and 16 years of age bringing 2*s* 11*d* each into the common Drug Fund for England and Wales What they will take out of it remains to be seen Will it be much ?

A Worcestershire Censure

An insurance doctor was away on holiday On the evening of April 22nd a message was sent to his partner asking him to visit an insured person Another message was sent at midnight and a note at 8 A.M on April 23rd but the partner did not arrive until 4 45 P.M He examined the patient and sent immediately for an ambulance but the patient died in hospital on April 24th

Such are the facts of a case lately considered by the Worcestershire medical service subcommittee They were told by the partner that if any urgency had been expressed by the messenger or in the note (which had been destroyed) next day he or his locum tenens could have visited the patient at once The subcommittee however held (1) that the partner was guilty of negligence in not visiting the insured person sooner especially after the second call at midnight on April 22nd and that the delay on his part was inexcusable (2) that the partner deserved to be penalised for such negligence but inasmuch as the patient s own doctor although absent from home at the time was responsible under Clause 11 (7) of the terms of service for all acts and omissions of any practitioner acting as his deputy or assistant and would have to pay any penalty which might be imposed they thought that substantial justice would be done if the partner were suitably admonished for his negligence The subcommittee recommended that both doctors should be severely censured but that no further action should be taken

The discussion at the meeting of the insurance committee revealed that the partner was not an insurance practitioner and consequently the committee had no control over him The responsible practitioner was away at the time and knew nothing of the incident and members of the committee, while desiring to inflict a penalty felt that it would be unfair upon the innocent insurance practitioner to deduct money from his remuneration So eventually the recommendation of the subcommittee was adopted and both practitioners were censured.

There is surely some confusion of thought here ; for if it was unfair to penalise the insurance practitioner financially for the misdeeds of his deputy it was hardly more fair to censure him for those same misdeeds Perhaps this difficulty could have been overcome by deciding that the insurance practitioner had committed a breach of the terms of service through the negligence of his deputy and that such negligence was deserving of severe censure If the committee wished to recommend the Minister to withhold money with a view to a deduction from the remuneration of the responsible practitioner they might have assumed that in a partnership the profits of the practice would be divided in agreed proportions so that part of the penalty would have been contributed by the negligent partner But partnership deeds usually contain a clause to ensure that if any partner by his own default causes a loss to the partnership funds he has to reimburse the other partner or partners the amount he or they would otherwise have lost, and so in all probability justice would have been done Certainly the position would have been more difficult if the defaulting deputy had been a locum tenens

The committee are to give further consideration to a suggestion that the Minister should be asked to amend the regulations to make it possible to inflict punishment upon a man who actually commits an offence but it is extremely unlikely that the difficulty can be overcome in that manner for the Minister has no control over a non insurance practitioner Meanwhile the Minister will consider under Regulation 42 (1) whether money ought to be withheld in this case.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM A LONDON PHYSICIAN

IV

THE physician finds his day crowded if not necessarily remunerative The morning begins perhaps with a tutorial or lecture and the more junior the physician (if this comparative be permitted) the more numerous his lectures seem to be In fact senior physicians are not allowed to do tutorials and their lectures are acts of grace A nine o clock tutorial given on a bitter winter s day enables one to grasp both cognitively and affectively the deep morning gloom of the melancholiac. I remember a registrar whose bounding Monday morning cheerfulness gave offence to the other registrars against the rosy start of his jolly week the emotions of his colleagues were chill and dismal as if compounded by Æschylus and Thomas Hardy

During the day the major problems are lunch and tea. Neither is absolutely necessary to life but breakfast having been sacrificed to the tutorial the stomach urged by emptiness habit, and hypoglycæmia enters consciousness at about one o clock The lunch hour is encroached on from the past by patients from the future by the threat of more patients whether the solid phalanx at hospital or the thin lost legion at Harley-street

Tea as a leisurely ceremony which may engender profound thought I find as inaccessible with honour as safety is to a soldier Of course one may sneak away from out patients but to do so needs moral courage that is (in this instance) the power of the alimentary instinct to overwhelm the herd instinct Out patients seem always to last a long time Although the work done there is more of a consultative nature than formerly it takes just as long I have been told that some of our sterner precursors did not allow out-patients to sit down in the consulting room they received advice and medicine standing I daresay they were examined lying down But to-day exhaustive interrogation and careful examination, with perhaps an X ray and blood test thrown in are deemed by patients their due The examination should be carried out in both erect and recumbent postures and as in the ritual of the ankle jerk an attitude of prayer is sometimes required I have heard it said that the position of the doctor is more important than that of the patient and know of one man who gains confidence by the elegant flourish with which he elicits the plantar reflex

* * *

Whereas the examination of an out-patient is most successfully carried out by routine methods, care being taken to have a good general look at the patient to begin with, the history can only be an individual work of art It may be true that a general resemblance is to be noted between the various works of an artist, but differences of detail are found Thus the model becomes a sacred figure in one picture, a nymph in another So is it with the history The versions produced by clinical clerk, house physician, and physician are often three distinct narratives Particularly is this true of certain abdominal cases

The complaints of the victim of chronic abdominal pain, of the variety for which no definite "organic" cause is found, are multitudinous The disorder, waxing and waning and chronically agonising, makes one realise that there may be something of truth in D H Lawrence's contention that the soul (I think it was the soul, but it may have been something more craving, hotter, and more chemiotactic than this) was in the solar plexus The innocent question, "Where is the pain?" brings an answer covering anything from 5 to 50 per cent of the body surface, a reasonable biological range But the inquiry, "How long have you had the pain?" calls forth a reply which conjures up an image of Time glorious in the weak perfection of its elasticity The symptomatic past, seen through the window of memory blurred with the desire to impress or to please, is now compressed, now extended, and education and intelligence are by no means the only limiting factors

* * *

I think it was Flaubert who said that an author should have sympathy but not pity for his characters Although I have never properly understood the great author's meaning, I have often felt that the statement was in some obscure way applicable to the relation of the doctor to the "chronic abdomens" Psychologist and surgeon have both had their say about these cases which may bear the scars of the one and hide the dreams of the other Even physicians have talked timidly of biliary dyskinesia, achlorhydria, carbohydrate indigestion, and spastic colon It would be of value to know what the zoologists would think about the problem Concealed in the belly and distorting its psychical representation must surely be the Butlerian memories of the experiences, habits, and injuries of the ancestral cœlom or its adnexa The trouble may even hark back to precœlomic days when hydra like ancestors sought to engulf their prey within their cœlenterons, just as the patient is apt to engulf the doctor I believe the zoologist could do something to straighten out the tangled skeins of certain medical controversies For example, one zoological theory, which states that the cœlom is an extension of the primitive reproductive pouches, would help to bring Freud into line with adhesions I must not, however, pursue these speculations too far lest my serious views be mistaken for levity

* * *

The lack of lunch is occasionally compensated by an evening feast I remember with mixed feelings a dinner at which fate placed me between a gynæcologist and a psychiatrist The latter gentleman's
statement that man is a psychosome, not a
detachable from a body, followed by ref
the work of modern psychopathologists, soon
me realise the position I was in, sandwiched be
id and ego Some light chat about the ne
followed, and then we got down to really s
matters, Wertheim's operation and perineal r
assailed me through one ear, schizophrenia
Alzheimer's disease through the other And
each ear connects neurally with both cerebral
spheres my bewilderment was considerable
not even get a chance to point out that at a
meeting of the British Association for the Adv
ment of Science reference was made to the
larities between the reactions of men and th
fishes, or that at this same august assembl
use of the ultracentrifuge method for the estin
of the molecular weight of proteins was desc
I even found myself wondering if the proteins
psychiatrist and gynæcologist were different
mine or had merely received a different orient
Fortunately the talk soon drifted to the re
merits of burgundy and claret Deserting the
lous seas and faery lands forlorn of new theori
like Babbit regained our balance by means of co
things In fairness to Babbit, however, it mu
pointed out that gin and whisky were more
line of talk than claret or burgundy, and that
distracted rather than restored him

* * *

The introduction of a new apparatus into me
is to day formal and matter of fact In th
days the origins of new instruments were
times romantic I believe that Laennec's a
reasons for inventing the stethoscope were his d
at the lousiness of some of his patients and the
bing of his heart which aural contact with th
Gallic chests of others induced Thus we se
stethoscope as a logical outcome of Parisian cu
Modern apparatus aims at quantitative pre
The physician hardly knows which apparatus t
so beautiful and so numerous are the engin
twentieth century diagnosis He must surely h
sphygmomanometer, partly because in some
the blood pressure reading is of value, and
because patients have been educated to worry
their blood pressures, the significance of which
understand even less than do their medical ad
The doctor must have an ophthalmoscope and
haps an auriscope He must also have needle
syringes to withdraw blood, pus, and other
Can the salesman induce him to purchase an appa
for estimating the basal metabolic rate? I m
at the man who can find in an increase in the B
obtained by an experiment likely to terrify
claustrophobic and conducted in an open war
decisive indication for thyroidectomy Under
tions of privacy and repetition the experiment
be more profitable and that not only in the
condemned by Mr Cronin

Apparatus marvellous as it is, takes my tho
back to a famous man who said that the most i
tant things for a physician are those in his ba
wondered at the time, albeit ashamed of my
erence, whether the place of honour should n
given to those in his brain. And thus, conf
mind with object and beginning a sentence w
conjunction, I take my leave

⁂ *This concludes the four articles by a L*
Physician Next month a Genito urinary S
will be responsible for these columns —ED L

PUBLIC HEALTH

STATISTICS OF ANTERIOR OLIOMYELITIS IN ENGLAND AND WALES

Although possible illustrations of cases of anterior oliomyelitis have been identified in Egyptian art id similarly in pictures of the fifteenth and succeed g centuries epidemiologically it must be regarded a disease of the present During the last quarter the nineteenth century it changed from a sporadic an epidemic disease Some of the apparent increase incidence is certainly due to more careful observa- on and the recognition of cases without paralysis ut better diagnosis compulsory notification (intro ced in most countries between 1910 and 1920) and ie generally greater interest in the disease are the fects rather than the primary cause of the increase England and Wales we have fortunately been ee from the major outbreaks recorded from time to me in the United States and in Scandinavia. The orded scale of the disease is shown in the following ures of notifications and deaths (Table I) for the st 12 years In the last four or five years the mber of cases has been fairly constant at some 0 to 700 We have to go back to 1926–27 for its t widespread outbreak when on the usual atic and sporadic appearance of cases there were perimposed epidemics in different parts of the untry—e g Leicester and the total number of es in the two years reached nearly 2000

During the week ending Sept 4th, 1937 the number cases notified was 62 This is the highest number recorded in any one week since 1926 when weekly figures of 79 78 68 and 65 were recorded at intervals in September and October Whether the relatively high figure this year is a precursor of an extension of the disease on the 1926 scale it is impossible at

TABLE I

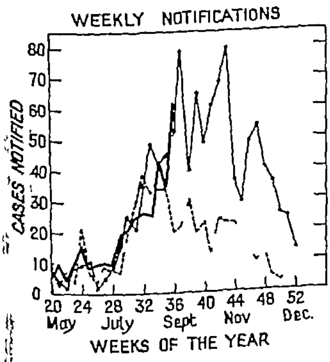
es of and deaths from acute anterior poliomyelitis in England and Wales

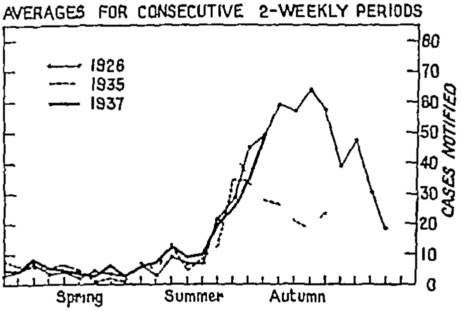
Year	Notifica tions	Deaths	Year	Notifica tions.	Deaths
1925	271	166	1931	330	98
1926	1158	23	1932	650	178
1927	801	182	1933	11	92
1928	452	107	1934	589	135
1929	531	140	1935	630	145
1930	500	164	1936	576	

TABLE II

Cases of acute poliomyelitis notified in England and Wales

Week of the year	Cases in each week.			Week of the year	Cases in each week.		
	1926	1935	1937		1926	1935	1937
1	4	8	5	27	5	9	10
2	3	7	5	28	6	8	9
3	2	5	3	29	16	7	19
4	0	7	0	30	25	19	21
5	7	10	2	31	21	20	25
6	0	2	14	32	35	38	27
7	2	3	5	33	48	33	20
8	6	8	6	34	4	34	43
9	5	7	3	35	44	35	35
10	4	6	5	36	62	20	62
11	4	4	4	37	78	22	
12	1	4	3	38	40	31	
13	5	3	5	39	65	20	
14	3		1	40	40	23	
15	2	3	8	41	61	13	
16	5	2	5	42	68	24	
17	3	1	3	43	79	23	
18	2	2	2	44	36	23	
19	5	5	7	45	29	10	
20	7	9	5	46	49	14	
21	4	3	10	47	54	10	
22	2	7	4	48	40	18	
23	8	4	9	49	36	5	
24	9	22	10	50	25	3	
25	10	7	8	51	24	6	
26	2	3	10	52	13	9	





present to say, though obviously the present world-wide prevalence must arouse uneasiness There is, however, a normal seasonal increase in incidence at this time of year, as is shown by Table II and the diagrams based on it For the first five or six months of the year a few odd cases are reported from here and there, usually less than 10 a week At about the middle of the year, or a little later, the incidence begins to increase, rising in a normal year (e g , 1935 in Table II) to between 30 and 40 cases per week, with a peak somewhere towards the end of September or beginning of October In 1926 a relatively high incidence prevailed for about two months from the thirty sixth to the forty-third week (September to October), and a secondary peak was noted at the end of November Up till now the weekly sequence of 1937 has followed much the same course as that of 1926 and it would be premature to presume that the peak for this year has been reached

The age of the patient is not an item of information required at notification and for evidence on age we have to rely largely upon the statistics of deaths In the last twenty to twenty-five years there has been an increase in the proportion of deaths that take place amongst adults This may be due, at least in part, to the increasing recognition of atypical cases at later ages and less emphasis on *infantile* paralysis In most epidemics recorded in different parts of the world the recognised attack-rate has been highest in the first five years of life, often in the second and third years More males than females are usually attacked Mention is often made of the circumstance that heads of families in which cases occur are men employed in occupations involving contact with large numbers of persons—salesmen, transport workers, &c No convincing evidence is, however, available either on this point or on the general impression that the robust healthy child is more often a victim Some workers have reported a susceptibility of persons with a particular blood-group, but fairly extensive figures from New York show no pronounced deviation from the normal at ages under 5 It is only rarely that infective contact can be traced—as would be expected if infection came from healthy carriers It is probably the existence of these carriers, together with a wide spread immunity, which gives to poliomyelitis its erratic character and results normally in cases being scattered here and there apparently at random To the cause of such exacerbation as we see at present we have no clue

Food Poisoning from Prepared Cream

As the outcome of Jordan's[1] work in Chicago, the possibility of food poisoning arising from the consumption of food in which a staphylococcus has elaborated an enterotoxin is now a recognised risk in America Mostly the incriminated food has contained a custard or made up cream, but outbreaks have been traced directly to milk Shaughnessy and Grubb,[2] also working in Illinois, say that in each of a number (unspecified) of such outbreaks investigated by them, in which milk-supplies from small farms were implicated, cows were found to be suffering from staphylococcal mastitis A similar outbreak was recorded in Wales in 1935,[3] the incriminated food being an ordinary baked custard made from custard powder and from Grade A milk having a moderate content of *Staphylococcus aureus* (hæmolytic) Although the cows appeared healthy, the same type of m organisms was found in the milk taken dire from them A gastrotoxin was isolated only f the organisms grown from the custard It se that the particular toxin which is capable of ducing gastro enteritis may be generated only w the organism is grown in certain media, nota milk, custard, made up cream, or ice cream, especi when prepared by the "cold mix" method, tho the low temperature at which ice cream is k diminishes the risk of bacterial growth It would unsafe, however, to assume that the vehicles of type of food poisoning are restricted to these me

Outbreaks, apparently of toxic origin, have b recognised for many years[4] It has usually b assumed that the responsible toxin is derived fr salmonella, especially where meat foods or f products are involved, but cultures of staphyloc were grown on more than 20 occasions from vari foods implicated in food poisoning at the laborato of the Ministry of Health in 1935, and in the sa year from meat paste sandwiches to which the inf tion of 50 to 60 persons was attributed in Fifesh On the other hand, there is definite evidence t cream cakes may be the vehicles of salmonella inf tion, at least one outbreak of a recurrent nat having arisen from salmonella (Thompson) in Car and district[6] in 1933, and another (unreported) fr the same strain in Bridgend and Ogmore in 1935

Among the more recent cases of staphylococ toxin poisoning recorded in America is one wh affected 110 persons in San Francisco in 1930, seemed likely that the cream custard b contaminated during its preparation in a b American health departments are therefore tend concentrate their preventive efforts on the proce preparation, and the following regulations hav promulgated by California State Board of Heal

1 All commercially prepared custards or cream of pastries shall be made under conditions of clea involving all stages of its manufacture

2 Only efficiently pasteurised milk may be used

3 The temperature and time of heating the mi sh be as a maximum the equivalent of a temperature 140° F for a period of one hour, provided, however t other temperatures and times may be used when specific approved by the director of public health

4 Upon completion of the cooking of the custard u for filling of éclairs or cream puffs or closed shells, should be put into shallow sterilised containers and chill without delay to 50° F When custard fillings are used open shells, the pie and the shell must be cooled likewi to 50° F

5 Custards must be kept in the cooling room until u in making pastries

6 The filling apparatus which shall be wholly of me or rubber, must be cleaned with boiling water and steril brushes or with a jet of live steam under pressure

7 Before use, filling apparatus shall be sterilised either boiling for 10 minutes or steaming in a ste steriliser for 1 hour

8 The manufacturer of custard filled pastry sh prohibit any person suffering from a skin infection fr preparing or handling in any manner such pastry or custard mix used therein

9 Only freshly made cream filling shall be used in e batch

10 During the process of distribution, all pastries c taining cream fillers shall be maintained at a temperat that will not produce spoilage Investigation has sho 50° F to be the maximum temperature

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[1] Jordan E O (1931) *J Amer med Ass* 97 1704

[2] Shaughnessy H J and Grubb T C (1937) *Canad publ Hlth J* 28 229

[3] *Rep Minist Hlth Lond.* 1935 pp 140 and 147

[4] Savage W G and White P B (1925) *Spec Rep Ser Res Coun Lond* Nos 91 and 92

[5] *Rep Dep Hlth Scot* 1935, p 60

[6] *Lancet* 1935 1 285

[7] Geiger J C (1937) *Publ Hlth Rep Wash* 52 765

[8] *Publ Hlth Rep, Wash* 1937 52 930

Similar regulations have been adopted by the Department of Health of the State of New Jersey [*]

The constituents of the so called cream used for pastry filling seem to vary In the Cardiff outbreak they were pasteurised cream marshmallow powder and egg white imported from China The latter was suspected as the source of infection and in this salmonella outbreak this suspicion was in accord with the possibility that duck egg was included in the consignment However in the subsequent infection of a similar type elsewhere in South Wales the constituents were dried milk powder marshmallow powder cornflour and egg white from local eggs so that the suspicion resting on Chinese eggs obtained no further confirmation Apparently marshmallow powder contains gelatin cane sugar and some albumin probably from eggs The chance of tracing infection back to its origin is but slight and it might be more useful to follow the American practice of exercising control at the place where the cream or custard is prepared although the possibility of the initial infection coming from one of the constituents especially milk must be kept in mind Contamination by a carrier during preparation of the cream or later in transport seemed to be a tenable theory even in the salmonella outbreak at Cardiff although the existence of carriers of the food poisoning group of organisms is generally doubted.

Unification on Tyneside

Addressing representatives of Tyneside local authorities at Newcastle upon Tyne on Sept 21st Sir Kingsley Wood recalled the unanimous feeling of the Royal Commission that progress efficiency and economy alike demanded some unification in local government He had to admit however that the complete scheme of unification proposed in the Majority report was not proving acceptable to the local authorities with whom under our local government system the initiative lies The more limited scheme of *amalgamation* proposed in the Minority report had received much more support In this scheme Tyneside would still have three local authorities (1) the combined county boroughs of Newcastle and Gateshead (2) the combined boroughs of Wallsend and Jarrow (3) a new county borough to be called Newcastle-on Tyneside combining the four urban districts of Gosforth, Hebburn, Felling and Newburn

Dysentery at Luton

We learn from the borough medical officer of health that the outbreak of dysentery at Luton has settled down although occasional cases are still occurring The Registrar General's return for the week ended Sept 4th mentioned 152 cases in the borough and 1 in the rural district. In the following week 30 cases were notified in the borough and none outside it

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT 11TH 1937

Notifications—The following cases of infectious disease were notified during the week Small pox 0 scarlet fever 1068 diphtheria 1241; enteric fever 87; pneumonia (primary or influenzal) 875; puerperal fever 41; puerperal pyrexia 139; cerebro-spinal fever 15; acute poliomyelitis 60 acute polio-encephalitis 2; encephalitis lethargica 3; dysentery 51 ophthalmia neonatorum 105 No case of cholera plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept 17th was 2600 which included: Scarlet fever 818 diphtheria 703 (diphtheria carriers 21), measles, 107 whooping-cough 379 puerperal fever, 17 mothers (plus 7 babies), encephalitis lethargica 283, poliomyelitis 10 At St Margaret's Hospital there were 17 babies (plus 6 mothers) with ophthalmia neonatorum

Deaths—In 124 great towns including London there was no death from small pox 1 (0) from enteric fever 2 (0) from measles 4 (1) from scarlet fever 16 (3) from whooping-cough 27 (8) from diphtheria, 67 (18) from diarrhœa and enteritis under two years and 9 (2) from influenza. The figures in parentheses are those for London itself

Greater London and West Ham each reported a death from enteric fever Diphtheria was fatal in 19 great towns in 4 cases at Manchester and in [illegible] cases each at Bradford and Leicester Eight deaths from diarrhœa were reported at Liverpool 5 at Birmingham, and 4 each at Nottingham and Sunderland There were 3 deaths from whooping cough at Liverpool

The number of stillbirths notified during the week was 209 (corresponding to a rate of 41 per 1000 total births) including 39 in London.

MEDICINE AND THE LAW

Circumstantial Evidence

DIRECT or circumstantial evidence—which of the two is the better? There can be no proof so satisfactory as the testimony of honest and unbiased eye-witnesses Yet as learned judges have said, we are frequently mistaken as to what we suppose we see and even more often as to what we suppose we hear And sometimes we are neither honest nor unbiased false charges are plausibly made and artfully supported On the other hand, circumstances cannot lie they are in Lord Hewart's words capable by undesigned coincidence of proving a proposition with the accuracy of mathematics Whether the evidence be direct or circumstantial, miscarriages of justice can occur Eye-witnesses make mistakes of identification In a classic case in the eighteenth century an eminent barrister swore positively to the persons of two men who had robbed him in broad daylight He was wrong the real robbers were two other men who were afterwards found in possession of the stolen goods. The prosecutor had to confess his error and is said to have compensated the wrongly accused pair The puzzling case of Adolf Beck is a more modern example Eye witnesses have persuaded themselves of remarkable sights Maynard reported a murder trial in 1631 where the dead woman's body had been exhumed thirty days after burial A parish priest a very reverend person about seventy testified that, when the body was touched by one of the suspected persons the deceased opened and shut one eyelid three times three times she put out and drew in again her ring finger while it dropped blood upon the grass A brother clergyman corroborated this evidence Then there are the witnesses who have recognised their assailants by the light of the flash of the pistol on a dark night In R v Haines (1799) a witness swore that by the pistol flash he could distinctly see that one of the robbers rode a dark brown horse of a very remarkable shape having a square head and thick shoulders, that he could select the animal out of fifty horses and had seen him since in a stable in Long Acre Circumstantial evidence if it tails off into mere presumption and suspicion can be no less fallible Lord Coke tells of the uncle who brought up his niece of about eight or nine ye [illegible] one day corrected her for some offence She was heard to say, " Oh ! good uncle, kill me not ! " Afterwards she disappeared The uncle was the more suspected because his dead brother's estate belonged to the niece and he himself was the next heir He was examined and committed to gaol on suspicion of murder The assize judges warned him that he must find the missing child and gave him bail till they next visited the county The unhappy man, in his anxiety, took another child as like as possible in years and appearance, dressed her up in his niece's clothes, and produced her at the next assizes The fraud was discovered and the natural inference was drawn He was found guilty of murder and was executed The truth was, however, that the niece, having been beaten by her uncle, ran away next day, she was kindly received by strangers and remained with them till she came of age to claim her estate when her identity was established A valuable circumstance in a murder trial is the proved existence of a corpse

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[*] *Rep N.J Dep Hlth* 1936 p 1 1

These and other interesting cases, together with much learning about evidence of hand writing, finger prints, and other technical matters, are set forth in the newly published seventh edition of Wills on Circumstantial Evidence (Butterworth and Co Pp 568 17*s* 6*d*) The book contains copious notes on the law and practice of India , indeed the whole of the footnote space is surrendered to Indian readers with the result that many references are inconveniently introduced into the text where they interrupt the flow of the sentences Be that as it may, the volume is a standard work and its present editor, Mr V R M Gattie, has maintained and enhanced its value

THE SERVICES

COMMISSIONS IN THE ROYAL ARMY MEDICAL CORPS

APPLICATIONS from medical men for appointment to commissions in the R A M C are invited by the War Office Candidates will be selected without competitive examination and must present themselves in London for interview and physical examination on or about Oct 21st They must be registered under the Medical Acts and not be over the age of 28 Successful candidates will be given short service commissions for five years During the fourth year they will be given the opportunity of applying for permanent commissions in either the R A M C or the I M S Those not selected will retire on completion of five years' service with a gratuity of £1000 Full particulars and forms of application may be obtained on application, by letter or in person, to the Assistant Director-General, Army Medical Services, The War Office, London, S W 1.

ROYAL NAVAL MEDICAL SERVICE

Surg Comdrs E V Barnes to *Drake* for R N Hosp , Plymouth , J H B Crosbie and J Wylie to *President* for Medical Dept , addl , for medical examination of cadets , E C Davis to *President* for course , W G C Fitzpatrick to *Pembroke* for R N Hosp , Chatham , C N Ratcliffe to *Pembroke* for R N B and to *Norfolk* (undated) , J Hamilton to *Victory* for R N Hosp , Haslar , and A A Pomfret to *Tamar* for R N Sick Quarters, Wei hai wei

Surg Lt Comdr W R S Panckridge to *President* for course

Surg Lts D A Hovenden to *Pembroke* for R N Hosp , Chatham , G H G Southwell Sander, W Wilson and B Ridgway to *Victory* for R N Hosp , Haslar , and T McCarthy to *President* for course

Surg Lts transferred to Permanent List J A Page, M H Adams, R M Bremner, J G Shmon, C V Harries, and T F Davies

A Fleet order just issued states that as soon as possible after Jan 1st 1938 short-service surgeon lieutenants of 1934 seniority, and also those of 1933 seniority who were permitted to defer their applications, are to report through the usual channels whether or not they wish to be considered for transfer to the permanent list About March applications for transfer will be considered together, and the selections will be promulgated in due course Should any officer wish to defer his decision the fact is to be reported

Surg Capt Hamlet M Whelan has been appointed in charge of the R N Hospital at the Cape of Good Hope (in succession to Surg Capt H F Briggs, appointed in October, 1934) He completes 25 years in the Navy on October 4th and in 1918 was medical officer of the cruisers *Essex* and *Adventure*, and at the R N Hospital, Granton He was promoted to surgeon captain in June, 1934, and since September, 1934, has been surgical specialist at the R N Hospital, Chatham

Mr G O Barber, Great Dunmow, Essex, has been appointed Admiralty Surgeon and Agent for Dunmow, and Mr W H King, of Fowey, Cornwall, for Fowey

ROYAL ARMY MEDICAL CORPS

Lt Col C T V Benson, having attained the age for retirement, is placed on retd pay

Maj J A L Wilson to be Lt Col

The Military Cross has been awarded to Capt James Wilson Orr, R A M C , for gallant and distinguished service in action in connexion with the operations on the North West Frontier of India, 1937

Short Service Commissions —To be Lts (on prob) W L H L Bell, T P Myles, J W Greenfield, S F Cranston, and R H Spurrier, from Reg Army Res of Off , R 4

REGULAR ARMY RESERVE OF OFFICERS

Lt Col J W Lane, having attained the age limit of liability to recall, ceases to belong to the Res of Off

TERRITORIAL ARMY

M C W Long (late Offr Cadet, Univ of Lond Contgt (Med Unit), Sen Div , O T C) to be Lt

ROYAL AIR FORCE

Squadron Leader F E Johnson to No 7 Flying Training School, Peterborough, for duty as Medical Officer

Flight Lt G H Morley is granted a permanent commission in that rank

Flight Lt H F Harvey is transferred to the Reserve, Class D

INDIAN MEDICAL SERVICE

Majs to be Lt Cols K R K Iyengar, G C Maitra, and A Ba Thaw

J H Caverhill from R A M C , to be Capt

DEATHS IN THE SERVICES

The death occurred on Sept 16th, at Fordingbridge, Hants, of Colonel OSBORNE HENRY CHANNER, late I.M S Born in 1853, he was the fourth son of the late Colonel George Girdwood Channer, of the Indian Army (seniority 1859) He graduated as M B at Edinburgh in 1876, and on Sept 30th of that year became an army surgeon, being soon afterwards appointed to the Bombay Army He served in charge of an expeditionary force to Malta and Cyprus from May to September, 1878, and in 1881 he was appointed Deputy Sanitary Commissioner of the Konkan District and of the South Deccan, and in 1888 of the Southern Regional District, Bombay In March, 1903, he was appointed Sanitary Commissioner for Bombay He retired in April 1907

GENERAL HOSPITAL, HALIFAX —The mayor of Halifax on Sept 14th opened the new private wards at this hospital Accommodation is now available for twenty patients in the north section of the building

CORRESPONDENCE

HEALTH OF MEDICAL STUDENTS

To the Editor of THE LANCET

SIR,—I am glad that the energy and horse sense of Mr Girling Ball have been harnessed to this subject which as I shall maintain has more implications than many have yet seen Such figures as I have by me fortify Mr Girling Ball s conclusions Of 607 students who entered St Mary s in the years 1923–33 five died and five failed to qualify through ill health The average annual wastage was seven out of the seven only one fell out through illness During those years the number of students who were given leave of absence on account of illness varied between two and three each year I am however doubtful whether a list of those students who during a decade failed to qualify through death or ill health entitles us to make ex-cathedra statements that the medical student s life does or does not adversely affect his health I agree we need not waste time debating whether the student works too hard. When a boy leaves school if he elect to become a medical student he will enjoy for three more years the spacious holidays—more than three months in the year—to which he has grown accustomed and even in the clinical years his opportunities for exercise compare favourably with those of his contemporaries who have found work in great cities It is more difficult to speak with precision of the dangers of infection: they seem to me inconsiderable The only unhealthy conditions a man has to meet in his training are those when he is a resident and they are largely of his own making Fresh to responsibility he often overworks keeps late hours and seldom goes out Dr Ridehalgh working as Prophit scholar for the Royal College of Physicians has been given facilities by some of the schools including my own so that we may presently have some reliable information as far as pulmonary tuberculosis is concerned

Let us however assume that the life of the medical student is as healthy as any other calling; we have still to ask ought we to be content with that standard? The quiet days when a man s health was his own concern have gone The Government is responsible for a campaign to provide opportunities for exercise that all men and all women in every class may get it and keep fit. Surely at such a time the medical schools should set an example. Are they doing this?

When in 1920 on my appointment as dean of St Mary s I first became interested in the physical fitness of a community the subject was less fashionable than it is now The facilities for exercise at the medical schools, swimming baths squash-courts and the like, were negligible All the sports grounds were on clay and waterlogged for part of the winter and only a fraction of the students at any school played games Much has been done since then but it is still true that the majority of medical students do not play games Accustomed at school to compulsory cricket and football for which they had no bent it is natural that boys should suffer from reaction when they find themselves master of their days in a great city not without other attractions They want to forget all those irksome hours They are not likely to remember Horace s words Si noles sanus curres hydropicus Many of them who had taken ally exercise in the country as long as they remembered spend the next six years after leaving school—some of the best years of their lives—in sedentary existence in a great town. We who are full of the precepts of Preventive Medicine, take them from a healthy life natural to their years and let them drift into a life that is less healthy almost without protest. It seems to me all wrong Is it inevitable?

It may be that if gymnastics are to become an essential part of the upbringing of youth, part of Preventive Medicine that an instructor will eventually be attached to every medical school in order that the doctors of the future may be familiar with this form of physical culture in all its aspects But all systems of physical drill soon become monotonous and though this was overcome by the Greeks by constant competitions national and local, they are never likely to be as popular or as effective in a medical school as games Can the man who has no aptitude for games get no fun out of them? That is the crux of the problem If we provide opportunities for exercise writes Mr Girling Ball, it is the students own concern whether they utilise them to the full I am not so sure It is—I quote Sir Arthur MacNalty— for the leaders of youth to appeal to the young men around them to take a pride in becoming physically fit To build swimming baths and squash-courts is a simple business to create an atmosphere in which the whole community does something by way of exercise is quite another matter That has been the settled purpose of my school for seventeen years not always fairly criticised As an old player I delight to see an Owen Smith practising his lonely art on the rugby football field As a dean I know that what matters more is that a third of my students *play rugby regularly on the same field*

The Englishman in tropical Africa has come to look upon daily exercise as one of the ingredients of health Just as he feeds at certain times so he sets apart certain hours in the afternoon before the sun sets for sport and games In temperate climates the penalties of the neglect of exercise are less dramatic But we are beginning to realise that as a nation we have been backward in shaping our lives to the environment of towns In this recasting of the national habit we as a profession have a part to play—a part, as many think worth playing

I am Sir yours faithfully

C M. WILSON

Dean of the Medical School St. Mary s Hospital W

Sept 20th

CONTINUITY IN ORTHOPÆDICS

To the Editor of THE LANCET

SIR,—In commenting upon the need for adequate orthopædic supervision of school-children in clinics surely you show excess of zeal. One cannot keep every patient under supervision indefinitely I have not myself read the report of the M O H for Willesden but you quote Mr Seddon as desiring to supervise cases of congenitally dislocated hip even when they have grown over school age This aspiration I submit, is not justifiable Most cases of congenitally dislocated hip seen at welfare clinics and reduced within the first two years of life do well Their treatment is completed by the time they are six they are then as cured as they ever will be In those who are not diagnosed till they are between 2 and 6 years old it is worth making an attempt at open reduction with a newly made shelf to help stability and prevent further upward dislocation. Should dislocation recur within a month or two of weight [illegible] they are best left alone; they [illegible] in [illegible] life, but till then they do not require supervision To clutter up out patient departments or clinics with cases coming up to report must surely be an admission that surgeons are getting afraid ever to commit themselves to saying either that they have cured the patient or that nothing further can be done for his condition A definite *pronouncement of this* kind helps the patient in so far as he must either accept the particular surgeon's word or decide to seek confirmation elsewhere If statistics of cures are desired, let these be obtained by means of a written questionnaire In any case most of us try to gloss over our failures, they are only seen in true perspective by the other man To have a procession of cured or hopeless *cases coming up to report* is useless to the surgeon and demoralising to the patient or his parents

I am, Sir, yours faithfully,
G O TIPPETT
Devonshire street W, Sept 14th

SOMNIFAINE NARCOSIS

To the Editor of THE LANCET

SIR,—There are a few points in Dr Menzies's letter in your last issue which merit further response In the first place he has not answered my criticism of his "starvation" theory In his series there were 19 patients with glycosuria and 5 with ketonuria, alleged to be due to excess of glucose in the diet and to starvation respectively If that were the case then alimentary glycosuria would be an exceedingly common phenomenon, which of course it is not The best authorities on carbohydrate metabolism, both clinicians and biochemists, agree that it is very difficult to induce alimentary glycosuria even after a single dose of 500 g of glucose, in fact, some have been unable to induce it at all (vide Taylor and Hulton, *J biol Chem* 1916, 25, 173, MacLean, *Modern Methods in the Diagnosis and Treatment of Glycosuria and Diabetes*, 1927, and Bennett and Dodds, *Lancet*, 1925, 1, 429), yet Dr Menzies finds it in 19 per cent of his cases! As it is the most reasonable course to assume that the above mentioned authorities on glycosuria are correct, then the obvious lesson to be learnt from Dr Menzies's paper is *that his results support the theory of disturbed carbohydrate metabolism* No doubt had Dr Menzies carried out systematic tolerance tests on the remaining 76 per cent of cases he would have found a large number of abnormal responses among them, but this evidence is lacking Incidentally quite a large number of my own patients developed glycosuria on 10 units of insulin *twice or thrice* daily, but this disappeared after increasing the dose to 15 or 20 units

If Dr Menzies had read my letter in your issue of April 4th 1936, he would see that my vision is not "obscured" nor am I suffering from a "ketosis complex", he would see that above all I advocate the most careful clinical observation, apart from urinary analysis No doubt ketonuria can be dispersed by large amounts of glucose in the majority of cases, but this does not affect the fundamental disturbance The diminished glucose tolerance and glycosuria during full narcosis shows that the body cannot deal with the glucose as under normal conditions, hence insulin is required Dr Menzies mentions the Swiss school in support of his argument I have recently read abstracts of two of the latest communications from this quarter (*Zbl ges Neurol Psychiat* 1936, 76, and 1937, 82) In the one the workers describe just over 200 cases treated with Cloetta's mixture with 3 deaths, the second comes from Berne with a mortality of 5 per cent in 170 schizophrenics There is nothing to suggest in these papers that either ketonuria or glycosuria was e thought of, let alone looked for Furthermore, validity of the theory of Quastel and Wheatley ba on careful experiments, and backed by clin observation in this country, and at least two w known hospitals in Scandinavia (Dikemark a Beckomberga) *cannot be dismissed with the* g rationalisation that it is only "of general intere but requires to be refuted by careful clinical inve gations combined with laboratory experiments

Had Dr Menzies given the insulin modificatio fair trial instead of juggling with dosage and gro I am convinced he would have been more favoura impressed and have saved himself unnecessary troul *As it is he is subjecting his patient to the more sev* strain of three weeks' narcosis, with increased risk renal damage, circulatory failure, epileptiform c vulsions, and unpleasant minor complications, wher the course can be shortened to 12–14 days by simple addition of insulin

I am, Sir, yours faithfully,
R STRÖM OLSEN
Runwell Hospital, Nr Wickford, Essex, Sept 18th

DIABETIC CLINICS

To the Editor of THE LANCET

SIR,—The Diabetic Association would be glad publish in its journal particulars of diabetic cli which are held in the provinces This informat is frequently asked for by diabetics who live outs London and wish to attend a clinic We should very grateful if your readers would send particul of such clinics to the secretary of the association this address

I am, Sir, yours faithfully,
STELLA CHURCHILL,
Hon Secretary Medical Committe
The Diabetic Association 124 Baker street
London W 1

EPISIOTOMY

To the Editor of THE LANCET

SIR,—I should have liked to have seen Pr De Lee's film *demonstrating his method of perform* lateral episiotomy of which *you make report in* present issue of THE LANCET (Sept 11th, 1937) one can observe with any acuity the parturi process in a primigravidous woman without becom perfectly certain that the perineal tissues opp birth, and in many cases render the process lon than it need be And since the simplest of examin tions suffices to demonstrate that the perineal tiss consist mainly of skin, with *some quite unimport* superficial muscles (except the ring sphincter of anus), and moreover, that very often they dreadfully damaged and horribly lacerated by natu forces, it must be obvious that the correct proced is to incise them sufficiently early to lighten labour and prevent or lessen this damage Ev those who advise "*protecting*" the perineum a award laurels to those who *manage to preserve* from laceration must be staggered at the cases prolapse occurring in women in whom the perine has not been torn In these cases the perineum l lost all its retractility it can be stretched as a f forwards, and backwards almost to cover the anu *and as a visceral support,* obviously, it is *no go* at all If an "intact" perineum is desirable it m be preserved from being inordinately stretche episiotomy, with proper subsequent suture, is j the way to effect this

But there is another point Prof De Lee belie that episiotomy "protects the pelvic floo f course one has to define what one means by the rm 'pelvic floor Some obstetricians seem to iink that the visceral connective tissue in the pelvis rms the pelvic floor but such seem to have rgotten not only how soft and easily stretchable this nnective tissue is during pregnancy but also the agnitude of the outlet of the bony pelvis. In view the forces occurring within the pelvis during life ren in the pregnant there is only one tissue that n occlude that aperture it is a musculature In 909 in your columns[1] I showed how the intact erineum by directing the advancing part of the ild s head forwards causes an increased enlargement of the pelvic floor aperture and a greater retching of the levator ani muscles than occurs hen the advancing pole of the head is pressed ackwards as Toft advised And of course the ore the muscle is stretched especially if the patient straining the more likely is its laceration Episio my by preventing undue extension rendering more fective traction backwards of the presenting part nd diminishing the straining required certainly oes protect this pelvic floor

Unfortunately however—so it is reported—Prof e Lee in his episiotomy cuts through the levator ni muscle The report states that the cut parts of he muscle are very carefully sewn together but here is the question of nerve-supply the extent of he division and indeed the region of the division hat exactly is a *lateral* episiotomy I also in all r nearly all) my primigravidæ do an episiotomy ut I make the incision obliquely backwards directing e scissors between the anus and the ischial tuberosity and cutting through only superficial tissues ot only do I think it unnecessary to sever the vator ani but I think this should be especially voided It is true that the levator ani, like the erineal tissues obstructs birth but its resistance—nlike that of the perineum—can be overcome by næsthesia especially by spinal With spinal anæs- hesia the levator ani is completely paralysed and an be stretched greatly without injury The method owever involves the use of forceps But on other ounds spinal anæsthesia in midwifery has been ondemned. It is a judgment which I think will not and when the *conduct of labour* as a whole is onsidered—without rage!

I am Sir yours faithfully
R H PARAMORE.

Rugby Sept 12th

NOCULATION OF HUMAN LEPROSY INTO SYRIAN HAMSTER

To the Editor of THE LANCET

SIR,—With reference to Prof Adler s very interesting letter in your issue of Sept 18th, which described e transmission of human leprosy to the Syrian amster I should like to state that it was Mr S E B alfour-Jones M R C V S who showed that it was ossible to infect Syrian hamsters with rat leprosy and is to him that all credit for this observation is due r Balfour-Jones demonstrated sections of tissues om infected hamsters at a laboratory meeting of the athological section of the Royal Society of Medicine n March 3rd 1936 and before certain members of e International Congress for Microbiology July 29th 36 but he has not yet published a full account of work on this subject.

I am Sir yours faithfully
P P LAIDLAW

National Institute for Medical Research
Hampstead, N W Sept 20th

REGISTERED MASSEURS

To the Editor of THE LANCET

SIR,—Having occasion to recommend a certain masseur to a friend I was amazed to learn that the patient s doctor refused to countenance the employment of the masseur on the ground that the latter was not qualified' On reference to the Medical Directory I found the explanation Under the registered masseurs there appears not more than 1 per cent of those given in the official list The Medical Directory list is ludicrous in its inadequacy Either a full list should appear in that august publication or none at all since doctors naturally regard that as comprehensive I am surprised that the Chartered Society of Massage and Medical Gymnastics has allowed this grave injustice to their members to continue without vigorous protest

I am Sir yours faithfully
Swindon Wilts Sept 19th H H GREENWOOD

OBITUARY

EDWARD GIBSON MOON M.R.C.S Eng

Dr E G Moon who died at his home at Marlow Bucks on Sept 14th only two years after his retirement from practice at Broadstairs was for nearly half a century a well known and greatly honoured figure in Thanet He was born in 1870 educated at Westminster and St Mary s Hospitals qualifying M R C S Eng in 1896 He equipped himself for general practice by taking appointments at St Mary s Hospital (as house physician and casualty officer) at the Hospital for Sick Children Great Ormond street and at the London Fever Hospital, and he went to Broadstairs in 1899 in partnership with the late Dr Frank Brightman He soon acquired a reputation that was more than local for skilful diagnosis and for expert management of difficult patients especially children The practice to which he was attached ultimately as senior partner developed into one of the largest in East Kent and Dr Moon himself was called into consultation by many of his local colleagues He was medical officer to St. Lawrence College to a number of the preparatory schools in the neighbourhood and to various convalescent homes, including the Alfred Yarrow Home and Hospital for Children from its foundation He remained in charge when during the war this home was temporarily adapted to form the Alfred Yarrow Hospital for Canadian soldiers

Dr Moon played games well all his life cricket and association football in his youth, golf in middle age and in his retirement he took to fishing with great enthusiasm He was a prominent freemason and a genial companion on all social occasions He kept in touch with St Mary s medical school and entertained the hospital cricket club at Broadstairs for many years Dr Moon was in a sense a physician of the old school His relations with his fellow practitioners were cordial but not informal though he was always ready to give help when asked. He took a prominent part in the social life of Thanet and later of that part of Buckinghamshire where he lived for the last two years and was popular in all circles He leaves a widow two sons and two daughters

Mr V Warren Low writes Moon s prowess as an athlete and sportsman during his career as an undergraduate probably obscured the fact that he was also in his own way a diligent student and it may have come as a surprise to many that, after qualifying in 1896, Moon exhibited the same zest and enthusiasm for clinical medicine that he had previously shown for cricket and football After holding various *house appointments he became a civil surgeon to the* Military Hospital at Fort Pitt, Chatham, a post he held for some months and acquired there a considerable surgical experience Very early in his career as a practitioner at Broadstairs Moon showed a clinical acumen that was remarkable, and as his experience ripened his opinion on a case became increasingly valuable This was freely recognised not only by his colleagues in Kent, where he was constantly called in as a second opinion, but even further afield In his later years he was frequently asked to come to London and elsewhere

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[1] Rôle of the perineal body during labour *Lancet* 1909 p 134

"Without being apparently a great reader Moon always appeared to be abreast of the modern developments of medicine, and his shrewd common sense prevented him from running after false gods He had a distinct flair for children's diseases, and his management of sick children, who were always attracted to him, formed a large part of his very extensive practice For many years he was the medical adviser to a number of preparatory schools in Thanet, and there must now be many hundreds of men in all stations of life and in many parts of the Empire who owe their health and sometimes more to Moon's care of their childhood's ailments Few individuals have enjoyed the popularity that was Moon's throughout his life He was popular as a schoolboy at Westminster, he was popular as a student at hospital, and he was popular until the end A large man with a large mind and a large heart, he was incapable of anything petty or small With his unfailing good nature, his modesty, and his whimsical humour he radiated good fellowship as few have ever done In his company, envy, hatred, and *malice had no place*, and though he was a man with definite and strongly held opinions those who have enjoyed the privilege of his friendship or even of his acquaintance, will always remember the kindliness and forbearance which he displayed to those who differed from him "

ROBERT GORDON SPINK, M D Aberd , D P H , D T M & H

The death is reported from Singapore of Dr R Gordon Spink, of the Malayan Medical Service, at the age of 32 The only son of Mr R G Spink, principal fishery officer at Aberdeen, he was educated at Peterhead Academy and entered Aberdeen University in 1922 Graduating ten years ago with distinction, he took a house appointment in the Aberdeen Royal Hospital for Sick Children, secured the D P H , and for a year worked as Carnegie research scholar in bacteriology in the public health department at Marischal College From this post he went to London to the School of Hygiene and Tropical Medicine, and in July, 1930, he joined the Malayan Medical Service being appointed health officer, Straits Settlements From Kedah he was transferred to Taiping, but was stationed at Kauntan when he became ill and was removed to Singapore

Dr Spink graduated as M D , with commendation for his thesis, shortly before entering the Malayan Medical Service He leaves a widow with one child

MEDICAL NEWS

University of London

Three lectures on the social and geographical pathology of cancer and tuberculosis will be given at the London School of Hygiene, Keppel street, W C , on Oct 4th, 5th, and 7th, at 5 30 P M , by Dr Georg Wolff, formerly director of the section of medical statistics in the public health department of the city of Berlin The lectures will be delivered in English and are open to all interested in the subject

Course in Venereal Diseases

A three months' course of instruction in modern methods in the diagnosis and treatment of venereal diseases will be given by Lieut Colonel E T Burke, the director, at the London County Council (Whitechapel) Clinic, Turner-street, E There will be lectures on Mondays and Thursdays at 2 30 P M , from Oct 4th to Dec 23rd, and on Wednesdays, also at 2 30 P M cases will be demonstrated Application should be made to the director before Sept 29th

London Local Medical and Panel Committee

The annual dinner held under the auspices of this committee will take place at the Dorchester Hotel, Park lane, W , on Thursday, Oct 7th, at 7 30 P M In previous years this function was primarily designed for insurance practitioners, but this year all members of the medical profession in London are invited Tickets may be had from Dr A F Heald, 17, Russell square, W C 1

German Obstetrical Congress

A meeting of the Deutsche Gesellschaft für Gynäkologie *will be held from Oct 20th to 23rd at the Langenbeck* Virchow Haus Luisen-str 58, Berlin The speakers will include Prof R T v Jaschke (Giessen), Prof H Straub (Göttingen), Prof C Kaufmann (Berlin), Prof Earl T Engle (New York), Prof Louis Grote (Dresden), Prof W Weibel (Vienna) Dr K Pohlen (Berlin), Prof J Husler (Munich), and Prof A v Reuss (Vienna)

Pharmaceutical Society of Great Britain

On Wednesday, Oct 6th, at 3 P M , the 96th session o the school will open with an inaugural address by S Humphry Rolleston at the house of the society, 17 Bloomsbury square, London, W C

Ophthalmic Medical Practitioners' Group

A meeting of this group will be held on Saturday, Oct 2nd at 3 P M , at 18, Russell square, London, W C , to conside matters of urgent interest All interested practitioner including members of the National Ophthalmic Treatment Board, are invited to attend

International Cremation Congress

This year the International Cremation Congress wi meet in London from Sept 24th to 26th under the pres dency of Lord Horder Visits will be paid to crema toriums near London, and on Sept 28th the delegates wi leave to make a three days' tour in the provinces The will return to London on Oct 1st Over two hundre representatives of 15 nations are expected to attend Further information may be had from Mr P Herbert Jone secretary general, 47, Nottingham place, London, W 1

Post-graduate Course in Budapest

The Central Committee for Medical Post graduate Wor in Budapest has arranged a course on balneotherapy an rheumatology which will be held at the house of th Royal Medical Society of Budapest (Szentkirályi u 2 from Oct 9th to 11th The lecturers will include L v Pa F Besançon (Paris), W S C Copeman (London F Klinge (Münster, Westphalia), M Messini (Rome, G Kahlmeter (Stockholm), and I Gunzburg (Antwerp, In connexion with the centenary celebrations of th Royal Medical Society of Budapest, which are being hel from Oct 7th to 9th, J Lépine (Lyons) will deliver a address on the rôle of chemistry in neurology An inte national spa congress is also being held at Budapest fro Oct 7th to 14th The committee may be addressed a Üllői ut 26, Budapest VIII

NOTES, COMMENTS, AND ABSTRACTS

BACTERIAL CONTENT OF PUBLIC TELEPHONES

By J T Smeall, M C, M B, D P H Edin

The fact that some people fear the risk of infection when making use of a public telephone suggested the following inquiry, which was made in the bacteriology department of the Royal Infirmary, Edinburgh, *into the bacterial content* of telephones

The investigation was carried out in Edinburgh where 75 telephones, all open to the public, were examined They were not specially selected, but were situated in various parts of the town, comprising those which were frequently used, such as those in stations and post offices, and those in less populous districts, which came into use at rarer intervals

The method of obtaining cultures from the transmitters was as follows sterile throat swabs, previously dipped in sterile saline, were rubbed round the mouth piece a few times and then replaced in their tubes From these inoculated swabs cultures were subsequently made on Löffler's blood-serum and laked blood agar, and later in the investigation also on glucose agar Smears were then made and stained by Gram and Ziehl Neelsen methods

Owing to the remarkable difference in the results obtained from the two types of telephone examined, the 75 instruments may be conveniently divided into 48 hand telephones and 27 with separate receiver and transmitter, the transmitter being fixed at about mouth level, but capable of adjustment within the limits of a hinge, to the height of the user

The following Table shows the types and percentages of the different organisms found —

HAND TELEPHONES		TELEPHONES WITH SEPARATE RECEIVER AND TRANSMITTER	
Non hæmolytic *streptococci* —	Bacteria Per cent	Non hæmolytic *streptococci* —	Bacteria Per cent
S salivarius	72 92	*S salivarius*	11 10
S mitis	68 75	*S mitis*	3 70
S equinus	12 50		
S ignavus	8 33		
S faecalis	2 10		
S non hæm I	2 10	*S non hæm I*	3 70
Staphylococcus aureus	4 17	*Staphylococcus aureus*	3 70
Staphylococcus albus	35 42	Staphylococcus albus	11 10
Chromogenic cocci	62 50	Chromogenic cocci	11 10
Diphtheroids	14 58	Diphtheroids	11 10
Yeast cells	47 92	Yeast cells	11 10
Subtiloid organisms	93 79	Subtiloid organisms	92 59
Micrococcus catarrhalis	4 17		
Moulds	20 83	Moulds	11 10
B alkaligenes	4 17		
B pyocyaneus	2 10		
Aerobic streptothrix	6 25		

DISCUSSION

The question of the possible transmission of disease by the use of public telephones has cropped up from time to time Thirty years ago[1] the telephone call station was described as a bacteriological box, in which pathogenic and other organisms are carefully nursed The annotation also refers to the possible projection of materies morbi by the speaker into the transmitter

In this present investigation it was early noticeable that there was a great difference between the bacterial content of the mouth-piece of the hand telephone and that of the instrument with ear and mouth pieces separate This is undoubtedly due to a great extent to the dependent position of the transmitter of the hand telephone, so that aided by gra droplets from the speaker readily find a nidus, whereas in the other type the mo is used in a more or less horizontal position, a to the height of the user, and is not soi retain any projected *bacteria* There is tendency for this type of mouth piece to bec more readily Since this examination was out the more modern *hand* telephone has the instrument with receiver and transmitte

The non hæmolytic streptococci isolated a high percentage of cases were normal th mouth commensals and their presence theref for no comment No hæmolytic streptoco encountered Saelhof[2] in an investigation bacterial content of 94 telephones in Chicag during, and after the influenza epidemic, found hæmolytic streptococci in 15 9 per cases, but he was *not successful in obtain* influenza bacilli He also isolated 2 st *B diphtheriæ* and he notes that Bissell[3] *performed with special reference to this* c failed to demonstrate it on the transmitter the present inquiry no *B diphtheriæ* were o The diphtheroids cultured were *all* non fer of Hoffmann type, with one exception which fe glucose The subtiloid organisms, which wer invariably present and the chromogenic cocci contaminants The almost constant presence cells, although sometimes in very scanty n was noticeable More successful cultures organisms were obtained after the use of agar The only pathogen obtained in cultu that only on three occasions, was the *Staph aureus*, but some of the other organisms were pathogens

In addition to the organisms enumerated Table, it is interesting to note that the fil 4 of the cases showed acid and alcohol fast Three of these were not thought to be true bacilli but the other one was regarded a morphologically indistinguishable from that o It is on record that tubercle bacilli have been from a telephone transmitter Thus Allan that Prof Klein found a number of acid fast in shape and size like tubercle bacilli in film a swab taken from the mouth piece of a tran in a public call box Guinea pig inoculation them to be true tubercle bacilli

CONCLUSION

It cannot be doubted that pathogenic org are deposited on occasion on the mouth pie transmitter, but the *risk of infection from* source must be somewhat remote The mou not come in contact with the mouth piece un accident Some careful people partially co mouth piece with their hand and speak throu gap between thumb and forefinger

One hesitates to make any remarks about th of the transmitters It has been done in language by others Suffice it to say that n then a transmitter was met with that a fas person would not care to or even dare to spea This should not be allowed

SUMMARY

(1) A remarkable difference was found bacterial content of the hand telephones an with separate receiver and transmitter

2) The streptococci obtained were all non molytic in type

3) The only pathogen isolated was *Staphylococcus* eus and that in only 3 cases.

4) Subtiloid organisms were almost always present ultures and yeast cells in films

5) Acid and alcohol fast bacilli were observed in the ect films from 4 cases One of these was regarded being indistinguishable from the tubercle bacillus.

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STORAGE OF EGGS

mong the many problems studied by the Food estigation Board is the transport and storage of and the Board s report for 1936[1] contains h that is interesting on this as well as other ects

hite of egg is not homogeneous but consists of outer layer of thin watery consistence a middle k jelly like layer and a third more fluid layer t the yolk The relative weights of these layers—which the middle one appears to be the most uid—alter on keeping at low temperatures e middle and inner layers decrease whilst at 0 (77 F) the inner layer remains fairly constant mount but the middle one decreases owing appa ly to changes in the mucin content Eggs deterio rapidly at summer temperatures, the yolk being cted before the white A panel of five egg tasters d that after six days storage at 25 C and 80 per humidity the yolk when boiled was flat r 15 days it had an obvious storage flavour and ree weeks it was uneatable On the other hand ge experiment now in progress has shown that keep fairly well at a low temperature for many ths either in air or in mixtures of air (or nitrogen) carbon dioxide or carbon dioxide alone Since grading was done by candling which depends the transmission of light and is affected by the kness of the shell, these results may not be rely trustworthy The research staff of Messrs ns however found that except for steam poach the eggs withdrawn from store were satisfactory e that had been stored in air or mixtures low in on dioxide giving the best results The further lts of this experiment should be valuable Mean e egg producers would be well advised to store for delivery in as cool a place as possible

he surface of an eggshell may harbour from 200 00 spores of moulds If the egg is stored in air rated with water vapour these will develop and ound the shell with a mycelial coating from h threads may penetrate into the white If it ught to avoid mould by storage in a dry atmo re the evaporation of water will enlarge the air e, affording a sure indication of age Certain nical agents will prevent the growth of moulds the legal aspect of their use seems uncertain h concentrations of carbon dioxide are effective give a better quality of yolk than low concen ions

he microflora of eggshells is extremely hetero ous but in the large-scale experiment already rred to there was little evidence of contamination he interior This does happen however and common green rot is due to infection of the white Pseudomonas sometimes in almost pure culture t black rot appears to be due to a variety of nisms Washing eggs seems to increase the risk bacterial infection by removing the surface ing which normally prevents bacteria passing through the shell For periods up to 12 hours exposure to bacterial infection the shell membrane seems to prevent penetration into the white, but after further incubation the white is heavily infected If washed eggs are dried and kept free from infection no harm should be done

The egg is a means of reproducing the race of poultry It is therefore interesting to note that the viability of fertile eggs can be extended by storage in air containing a moderate concentration of carbon dioxide of the order of 2 5 per cent

THE CAPILLARY MEMBRANE IN MAN

THE properties and functions of membranes natural and artificial are interesting but not very easy to understand. The report of one of the Faraday Society s general discussions contains a paper on the permeability of the capillary membrane by Prof Ancel Keys of Rochester Minnesota which calls attention to some neglected aspects of capillary exchanges in man (*Trans Faraday Soc* 1937 33 930)

Prof August Krogh who read an introductory paper on natural membranes referring to ambiguity regarding the proper use of the word membrane said: I take a membrane to be a structure (with main extension in two dimensions only) which will restrict the free movement of molecules or particles but will not by expenditure of energy bring about any trans port of substances across its thickness This seems to be a useful simplifying conception separating the functions of membranes from those of the complicated and active structures which they both separate and connect in living organisms

Keys strongly emphasises the appreciable resistance which the walls of the capillaries offer to the passage of crystalloid ions and molecules adducing the fact that intravenous injections of calcium sulphate magnesium and phosphate produce temporary rises in the plasma concentration of these substances lasting for 1–2 hours which could not occur if they passed very rapidly through the capillary wall since the magnitude of the change is greater than would be expected if the injected salts were equally distributed between blood plasma and tissue fluid Similarly the injection of sucrose into the blood stream shows that osmotic equilibrium is effected many times as rapidly by a shift of water as by sugar exchange. The effect of sugar solution in dehydrating tissues has been much used for the reduction of intracranial pressure in these cases the hydræmia resulting from the sugar injection far exceeds the volume of water that is extracted from the brain, the limiting membranes involved permitting the passage of water much more readily than that of sugar molecules. Both quiet standing and violent exercise result in decreased blood volume and increased concentration of protein and apparently also of calcium in the plasma owing to filtration, or (as suggested by Krogh in discussing Keys s paper) an uptake of a more active kind of water by the muscle tissues during exercise. Immediately after running to exhaustion in one minute as much as 24 per cent of the water of the plasma may have been lost to the tissues The evidence as to protein permeability of the capillaries is overwhelmingly in favour of the conclusion that they are not completely protein tight and that the protein concentration of the transudates is ordinarily something like 0 5 to 1 g per 100 c cm Keys considers that this fact is best explained by the assumption that the capillary walls are not uniform but have occasional 'holes' or regions of excessive permeability since the very thin walls have a low mean pore radius appreciably less than the radius of colloid molecules like albumin and hæmoglobin

Krogh has convinced us that at any time the bulk of the blood is in the capillary system and not in the impermeable and structurally substantial venous and arterial systems If the capillary walls offered only inappreciable resistance the normal activities of the body would provide osmotic and hydrostatic forces theoretically sufficient to upset completely and fatally the balance of fluid between blood and tissue Prompt and powerful compensation is needed to maintain homeostasis The compensatory effects in the blood tissue exchanges themselves have, in Keys's view, been generally overlooked Even water requires some time to cross the capillary membrane, and some of the new ions formed during exercise diffuse back into the blood, but the retention of plasma crystalloids increases osmotic pressure within the capillaries and keeps the net outward passage of liquid within limits allowing the fluidity of the blood always to be sufficient to ensure circulation This "osmotic buffering," as Keys calls it, is in his opinion important among many other compensating factors

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[1] epartment of Scientific and Industrial Research Report e Food Investigation Board for the Year 1936 H.M. ionery Office 3s 6d.

In the discussion on Keys's paper, electric potential differences across the membrane, leading to electrophoresis, and forces producing surface-active substances at the end of microscopic particles, leading to movement similar to that of camphor on water were suggested as possibly contributory to the compensation which keeps the volumes of blood and tissue fluid within safe proportions

INCIDENCE OF SYPHILIS IN AMERICAN NEGROES

THERE has been a good deal of speculation about the relative frequency of syphilis in the white and negro races in the United States Accurate figures are not available for the whole population, but it has long been recognised that clinics and hospitals whose patients are mostly negroes find more syphilis than hospitals whose patients are mostly white In the *American Journal of Syphilis, &c*, for May last, Holloway and his co workers reported a positive reaction to one or more of the serologic tests (Wassermann, Eagle, and Hinton) in 27 4 per cent of 13,728 negro patients attending their clinic in Nashville, Tennessee If the positive readings with only one plus are considered doubtful, the total percentage of positive cases falls to 22 1 Some 70 per cent of the patients with positive tests said they did not know they were syphilitic, and only 13 per cent had had specific treatment In a group of 836 negroes, largely students and generally of a more healthy, and more intelligent type, the incidence of syphilis was judged by these serological tests was 5 9 per cent Whatever the extent of syphilis in the white population of the country, it is probably much less than this Present estimates range from 2 to 10 per cent, but the latter figure includes negroes and whites alike for the entire country

EXPLOSIONS IN THE HOME

THE annual report of His Majesty's Inspectors of Explosives [1] seems to show that the public is either very careless or very ignorant of everyday risks Thirteen accidents in 1936, involving death and injury, were due to the domestic use of petroleum spirit for dry cleaning This seems a costly and drastic method of teaching men and women that petrol vapour, being much heavier than air, falls in a still atmosphere and is easily conducted by a draught towards an open fireplace or a naked light The result is a flash back to the cleaning receptacle, a fire is started and sometimes burning liquid is upset over the operator's clothing Fires may also be generated by static electricity when garments, especially silk ones, are rubbed in the cleaning process The Inspectors of Explosives repeat their official warnings of these dangers and fortify them with examples A woman was cleaning garments with petroleum spirit at Kensington when the vapour was ignited by a gas refrigerator, the almost invisible flame under such a refrigerator is only too likely to be forgotten Another at Roehampton was using the same process for cleaning a floor when the vapour was ignited by a hot water boiler A third, at Kensington again, was seriously injured while cleaning garments in the bath having failed to notice that the pilot jet of the g was alight Yet another woman at Maryle cleaned garments in a dish containing petrol, em the spirit into a sink which was blocked, and c a fire by striking a match to light a gas cooke feet away from the sink. Then there was the w at Woolwich who was injured because she was sm a cigarette when she took a bottle of petrol to some clothes To these instances might be adde accidents which occur through somebody sm when the tank of a motor car is being re fu A drop of petrol upon a hot exhaust is another s of injury These are risks which should be gu against at every garage Among miscella accidents the inspectors' report draws atte to the dangers of using oil or grease in conn with oxygen Every oxygen cylinder has a label a warning on this point At the instance o inspectors one of the principal companies v supply oxygen is adding to the label a further wa against the use of compressed oxygen by mistak compressed air Two years ago there was a accident when the tyre of a lorry was inflate compressed oxygen The same mistake ca extensive injuries on two occasions in 1936 the error occurred in the testing of fuel oil st tanks, a workman entered the tank with a li candle, there was a violent explosion and he severely burned In the second case the ox cylinder was employed by mistake in a factory v had an oil purifying plant As the oil had previously heated to a temperature of 500° F explosion was inevitable when oxygen was adm Four men were injured

Another range of accidents is attributable t manufacture of fireworks by amateurs The sc boy who experiments for this purpose with a mi of chlorate with sulphur or phosphorus does realise that the result is not merely sensitiv friction but also rapid and powerful in expl effect Where gunpowder, accidentally deto by being ground by pestle and mortar, may d more than scorch the face and singe the hair chlorate mixture can go off with a violence v smashes the mortar and perhaps blows aw finger or a hand. Nor are these the surrepti adventures of the undisciplined juvenile Che sets, actually manufactured for boys, have cont potassium chlorate In one case a qualified che was prosecuted and fined in 1936 for having n and supplied to a boy of 13 an ounce each of potas chlorate and sulphur In another case a master elementary school met with serious accident d a demonstration He had mixed potassium chl and antimony sulphide in an envelope He a phosphorus and was smoothing it over with a of chalk when an explosion occurred which ca him to lose three fingers It was found that science text-books used at the school desc these mixtures and suggested other experim The Inspectors of Explosives say that the m was taken up with the publishers and the Boa Education

Though it lies outside the scope of the inspec report, there was a recent illustration in the courts of the possible dangers of teaching scien schools It resulted in the award of £3000 dam to a schoolgirl for the loss of an eye The tea of the chemical class supplied a girl of 13 with mate and apparatus so that she and the rest of the could make oxygen. The girl was told to mix heat potassium chlorate and manganese dio The science mistress had bought from chemis black powder labelled as manganese dioxide actually containing a mixture of 10 parts of antim sulphide to 1 part of manganese dioxide mixture was certain to explode in heat if mixed potassium chlorate, though the true manga dioxide would not have had this result The father did not press the claim against the mistress and the chief issue of the litigation

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[1] Cmd. 5541 H M Stationery Office 9d